THE INDUSTRIALIST

Historical Society

Vol. 34 No. 20

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

The Industrialist.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

TERMS AND VACATIONS.

FALL TERM, 1907, THIRTEEN WEEKS.

Thursday, Friday, and Saturday, November 28, 29, and 30.....Thanksgiving vacation
Thursday and Friday, December 19, 20.....Examination at close of term

WINTER TERM, 1908, TWELVE WEEKS.

Monday, January 6.....Examination for admission, at nine A. M.
Tuesday, January 7.....Winter term begins
Tuesday, January 7.....Short courses in agriculture and dairying begin
Saturday, February 1.....Annual intersociety oratorical contest
Saturday, February 15.....Mid-term examination
Thursday, March 19.....Annual concert
Thursday and Friday, March 26, 27.....Examination at close of term

SPRING TERM, 1908, ELEVEN WEEKS.

Monday, March 30.....Examination for admission, at nine A. M.
Tuesday, March 31.....Spring term begins
Saturday, May 9.....Mid-term examination
Tuesday, May 19.....Beginning of summer course in domestic science
Tuesday and Wednesday, June 16, 17.....Examination at close of year
June 14 to 18.....Exercises of Commencement week
Thursday, June 18, at ten A. M.....Commencement
June 19 to September 16.....Summer vacation

FALL TERM, 1908,

Wednesday, September 16.....Examination for admission, at nine A. M.
Thursday, September 17.....College year begins

BOARD OF REGENTS.

HON. A. M. STORY, President.....Manhattan
HON. J. O. TULLOSS ['99], Vice-President.....Sedan
HON. J. S. MCDOWELL.....Smith Center
HON. GEO. P. GRIFFITH.....Hays
HON. EDWIN TAYLOR.....Edwardsville
HON. W. E. BLACKBURN.....Anthony
PRES. E. R. NICHOLS, Secretary *ex-officio*.....Manhattan

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A. M. (University of Iowa).....President
CHARLES WM. BURKETT, M. Sc. (Ohio State University).....Director Experiment Station
JOHN D. WALTERS, M. S. (K. S. A. C.).....Professor of Architecture and Drawing
JULIUS T. WILLARD, M. S. (K. S. A. C.)....Professor of Chemistry, Vice-Director Exp. Station
BENJ. L. REMICK, Ph. M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B. S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A. B. (U. of K.), M. S. (K. S. A. C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph. M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S. B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M. S. (K. S. A. C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A. M. (U. of R.), Ph. D. (Univ. of City of New York)....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B. S. (K. S. A. C.).....Professor of Domestic Science
RALPH R. PRICE, A. M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A. M. (Central Wesleyan College).....Professor of Economics
JOHN V. CORTELYOU, A. M. (Uni. of Neb.), Ph. D. (Heidelberg).....Professor of German
OLOF VALLEY, B. M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D. V. S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B. S. A. (Iowa State College).....Professor of Animal Husbandry
WALTER E. KING, M. S. (Cornell).....Professor of Bacteriology
THOMAS J. HEADLEE, Ph. D. (Cornell).....Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U. S. A.....Professor of Military Science
JOHN C. KENDALL, B. S. (N. H. A. & M.).....Professor of Dairy Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art
MISS ANNE M. BOYD, A. B., Lib. Sci. (Millikin).....Librarian
ROBERT J. BARNETT, B. S. (K. S. A. C.).....Principal Preparatory Department

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., FEB. 22, 1908. No. 20

Kansas Boys' and Girls' Contests for 1908.

(Abstract from Boys' and Girls' INDUSTRIALIST.)

The boys' corn contest sentiment is growing in Kansas. The interest is much greater now than ever before among farmers and farmers' boys. It has reached that stage when it is appealing to the thoughtful business men of every county as a great economic movement. It needs now but careful management at headquarters and in every county to make it the greatest educational force ever known in the State. When boys and girls are enrolled in a contest calling for thought and study the whole mind is awakened. They read the pamphlets and bulletins sent out by this department carefully, and the mind is strengthened as much as by close study of a school subject. The contest in 1906 was limited to about forty-six counties, and in 1907 it was undertaken by fifty-four counties and going farther to the west. Only four or five counties that were in the contest the first year failed to enter last year. These, I think, will all come back "into the fold" this year. Very much to my regret, there was but little response to the call for "garden contests" last year, but it did not seem to be well understood. The same plans for these are announced again, and I certainly hope that village and town boys and girls may be interested and encouraged to take up these flower and vegetable contests. When the boys and girls are so responsive everywhere we must not have a delinquent county. The contests are so varied that no county should ask to be excused. It is all for the boys and girls of Kansas—our boys and girls, the future citizens of our State. And these contests are not merely to increase our crop production; they are to increase respect for the great base of supplies—the soil; they are to magnify the idea that those who make plants grow and produce are the only original producers; that those who improve the yield or the beauty of a plant are benefactors to mankind. Therefore we desire to broaden our lines this

year and take into the contest not only the boys of the Kansas farms, but the girls also; and not only the boys and girls of the farms, but the thousands of boys and girls of our villages, towns, and cities. We hope to enlist in this great soil-working campaign at least 20,000 Kansas boys and girls, and back of them and working for them, farmers' institutes, women's clubs, school officers, superintendents, principals, and teachers, and thousands of other public-spirited citizens.

Thanks are due to Professors Calvin, TenEyck and Dickens and to Instructors Eastman and Ahearn, of the Kansas State Agricultural College, for suggestions for the various contests, and to President Nichols for constant encouragement and helpful suggestions for this important extension work of the College.

THE CORN CONTESTS.

These contests will be under the general direction of the county farmers' institute organization of each county. The executive committee of each institute should meet very soon and decide upon varieties of corn to plant, where they will secure the seed (the department has no seed-corn to sell), how and when it will be distributed, what other contests they want to undertake, and also to appoint proper committees for special work. Last year's experience makes it clear that the county superintendent of schools should, in most cases, be asked to take charge of the corn contest membership and, if that officer is willing, to attend also to the correspondence and receive names for all other contests that will be brought before the annual institute. In many counties the county superintendent is now the regular secretary of the institute, and in very many others has been chosen "boys' and girls' secretary." The changes now made in the plans for 1908 will, it is hoped, greatly increase the membership and the agricultural benefit. In most counties in eastern Kansas the membership should be trebled or quadrupled, and certainly not a county in eastern Kansas ought to be out of the contest this year.

It seems wise to make a very arbitrary division of the classes in the contest this year, partly to reach some older boys, boys over eighteen, and also to strengthen the general work. Therefore, there will be two classes this year, as follows:

Class B will be open to boys from ten to fourteen years of age, whether they have been in the contest heretofore or not. Each boy should be given one quart of good seed-corn by the county committee, and be pledged to exhibit ten ears at the county institute next fall, the winners to receive cash or merchandise prizes.

Class A will be open to boys from fourteen to twenty years of

age, whether in the contest last year or not, each boy to plant ten ears of good seed-corn of his own raising, or from elsewhere, and be pledged to exhibit ten ears next fall at the county institute. It is also recommended that this class be given as prizes free trips to the State institute, which will be held December 28, 1908, to January 2, 1909. It is recommended, although not required, that these boys be asked to plant their ten ears in ten rows of equal length in an ear-to-row test. Where the available plot of ground is not long enough for this, the contestant may plant twenty shorter rows. In this ear-to-row contest the boys will be taking a very valuable lesson in corn breeding, noting in blanks the weight of the corn grown from each ear, per cent of germination in each row, and the general condition of each row through the summer.

These corn contests, as last year, will culminate at the county farmers' institute meetings, to be held between October 15 and December 20, 1908. There are many reasons why this department cannot recognize contests held at any other time or place. The principal reason is that the contestants are obliged to attend at least one session of an institute, and we want them to hear the addresses on corn growing. Those committees that have heretofore permitted the boys' corn contest to be made a part of the county fair have lost a great opportunity for teaching the boys about corn growing.

In the year 1906 the fifty-odd contest committees in Kansas paid out to the winners in the various contests nearly $3000 in cash, a splendid contribution to the education of the boys of the State, but it did not carry the educational work far enough; and, therefore, last year the recommendation was made that the committees, instead of giving cash prizes, arrange to send all the winners in the county contest to the State farmers' institute and State contest to be held at the State Agricultural College. The recommendation made was heartily responded to, and only four counties of all those who were in the contest declined to accept the recommendation. That the plan recommended was successful was proved by the fact that more than 350 boys from fifty counties came to the State institute last December for the "nine-days' judging school." This whole movement is for education and for inspiration, and not merely to swell the boys' bank accounts.

The general contest will for this year be limited to boys between the ages of ten and twenty; class B, boys from ten to fourteen years of age, and class A, boys from fourteen to twenty. Boys who will be fourteen years old by July 1, 1908, may be admitted into class A. Each boy who enters the contest must agree

to cultivate well and exhibit ten ears of corn raised either from the quart of corn or from the ten ears, if in class A, at the county institute and corn contest next autumn or winter. With his entry he must submit a statement as to plowing the ground, kind of land, and other information as called for on the blank printed on the second page of the cover of the pamphlet sent out. Three copies of this blank will be sent from this office in August to every boy in the contest; one copy for pencil use, another to be filled out with ink and sent to the county secretary, and the other filled out with ink and taken to the county institute next fall. Each boy must also agree to attend, if at all possible, at least one session of the county institute.

All the winners in the county contests in class A will be eligible to enter the State contest. This contest will be held at the Kansas State Agricultural College, December 28 and 29, 1908, under the auspices of the College. Boys who win in local contests will be allowed to bring the same ears exhibited at the local contest, or they may make a new selection, but from the product of the same corn authorized by the committee in the spring for the contest. No corn will be entered in the State contest unless brought in person by the boy who raised it or by his alternate, and who must spend at least three days in attendance in corn-judging classes. A bulletin will be sent in late summer to all contestants, in which will be given in detail rules for selecting and judging corn, score-card, etc. This will not be sent again to those who were in the contest last year. At the State contest this year a special class will be made for counties in western Kansas.

GARDEN CONTESTS.

Heretofore our contests have been limited to corn, and to corn grown on farms. Last year we suggested various garden contests, but were much disappointed in the small number reporting. In fact, not more than one-half dozen villages or towns organized any contests of this character. It seems to me that this is a very great neglect, and I believe that the thoughtful men, in our smaller towns especially, ought to get behind this movement for interesting the boys and girls in working with the soil and in producing something, in the making available vacant lots and "vacant time," and so I am again making the same announcement for the contests for this spring, anxious to interest several thousand bright boys and girls of our villages, towns and cities in this great campaign of soil study.

The fruitful farm ought also to have a beautiful home. The prosperous village ought to have beautiful homes. And it does

not need a mansion to make a beautiful home. While we are encouraging the boys to increase the yields of corn, potatoes, etc., we must also help the girls to make the plain yard a beautiful one. The love for flowers and taste and skill in growing flowers is to be developed by practice as well as by preachment. Therefore, this contest. It is not to be limited to the farm, but will be open to girls of farm, village, or town.

DOMESTIC SCIENCE AND ART CONTESTS.

That the girls should be equally interested in the institutes of the State seems desirable, and that this may be attained it is suggested that there be several premiums offered for work done in the home by girls from nine to sixteen years of age.

A bread contest is easiest and best in many respects, being more instructive than any one other line of work, and the results of the girls' efforts more readily seen and judged. Premiums might be offered on white bread, whole-wheat bread and bread made from flour of Durum wheat—the latter variety only in localities in which such wheat is grown.

A canned fruit and vegetable contest would be interesting and profitable, the girl showing the best and largest collection of fruits and vegetables, canned, preserved, or pickled, the work all having been done by herself and no preservative being used, receiving the prize. A contest of jellied fruits could be carried on under like conditions.

Needlework contests should consist of hand work on useful articles, *i. e.*, on aprons, table linen, etc. Samples of darning and mending may also be shown in contest. Fancy needlework and the baking of cakes and pies are of doubtful value when in connection with farmers' institutes.

TIME LIMIT FOR ENTERING CONTESTS.

As this contest work is to be something of a school, inciting to study and practice, and also to lessen the amount of work for the several committees, it is suggested that a limit be fixed for entering the several contests, as follows: (1) Durum wheat, March 10; (2) corn, maize, potato, garden, sugar-beet, flower-garden, April 20; (3) baking, sewing, etc., June 10; (4) baking corn bread, canning fruit, etc., September 10; (5) corn judging, October 1.

This department invites and hopes to have the coöperation of all farmers' institute officers and members, of all county superintendents of schools, of all city superintendents and principals of schools and all teachers, of all boards of education, of all women's

clubs and other helpful organizations, of all Kansas newspapers, of all public-spirited citizens of Kansas, who believe in the boys and girls. We feel that our State is on the eve of a great awakening in agricultural education, and we therefore invite the coöperation of all who are interested in this movement. Complete instructions may be had by addressing J. H. MILLER,

Superintendent Farmers' Institute Department.
Manhattan, Kansas.

British Columbia Places All Its Forest Lands In Reserves.

At one stroke of the lieutenant governor's pen, 150,000,000 acres of forest land in British Columbia have been placed in reserves. This includes every acre of the province's timberlands, except what has been leased. This is as much land as was put in the National Forests of this country between the years 1891 and 1907.

The action was taken to check wasteful exploitation of timber resources and to bring the care and cutting of timber more effectually under government control.

The province has been leasing timberland instead of selling it. The most of the leasing has been done the past three or four years, and Americans hold the largest part of the 10,000 leases now in force. The lease is, in its effect, a long-term option at low rate. It runs twenty-one years, and may be renewed at the end of the first term. The lessee pays twenty-five cents a year until he is ready to cut the timber, when he pays a royalty of fifty cents per 1000 feet, board measure, for the timber removed. The income of the province from leases was about $1,275,000 last year.

British Columbia is the latest of the great soft-wood timber regions to be invaded by lumbermen. The great industry began its work in Maine two or three generations ago; passed later to the pine and hemlock forests of Pennsylvania and New York, and when supply ran short there they moved to Michigan, Wisconsin, and Minnesota. The pine woods of the lake states held out a long time, but the decline finally became so rapid that the scene of operations was shifted to Washington and Oregon. The output of the Puget Sound region rose to first place, and it is still at top notch. But holdings are harder to get, and buyers and speculators have crossed into British Columbia. While there are many rich stands of timber in the province, it is doubtful if the forest woods furnish a cut of more than 100 to 150 billion feet of lumber —less than what this country uses in eighteen months.

British Columbia does not permit the export of logs cut on provincial land. They must be sawed by mills in the province, which

evidently intends not only to take care of its timber, but to make the most out of it. An export duty has been seriously considered by the Dominion goverment for all the provinces of Canada. It is apparent that British Columbia will not be slow to take any advantage which the further diminishing of the timber supply of the United States may afford her in the lumber trade.

Students' Judging Contest.

1. This contest is open to teams of students representing the first, second, third and fourth year long course-classes, and the second-year short-course classes in agriculture. Each team will consist of five students, none of whom have served at any time on College teams in corn judging at the International Live Stock Show or at the National Corn Exposition. Prizes will be awarded for individual competition, as well as for the Fielding trophy.

2. This contest will be held on Monday morning, March 9, starting at 8 o'clock and continuing until completed.

3. Each sample shall consist of 10 ears of corn.

4. The samples will be 10 in number, two samples from each of the following varieties: Boone County White, Silvermine, Reid Yellow Dent, Kansas Sunflower, and Hildreth.

5. Fifteen minutes shall be given each student for the placing of each sample.

6. Each student shall, in the presence of the judges who placed the sample of corn, be allowed 3 minutes to give orally his reasons sustaining his placing.

7. The student shall place the 10 ears of each sample in the order of their excellence, the object being to select those ears which will be most profitable for the breeder or the grower, if he were to engage in the business for the next ten years.

8. The student shall be marked or graded chiefly upon his placing of the first five ears. The mention of the 6th and 7th shall be for the purpose of assisting the judges in their marking, where competition is close.

9. The placing of the samples shall be completed before the oral report by the contestants to the judges is made.

10. At the time of making the report the student shall have before him the sample of corn, that he may refer to it when giving his reasons substantiating his placing.

11. No changes in placing can be made after the reports are handed in.

12. The ten samples of corn used are to be placed in common by three judges, who shall agree in the placing.

13. The samples to be judged will be furnished by the Department of Agronomy.

14. The scale of marking shall be 60 points for placing and 40 points for reasons.

The Green Bug.

(Press Bulletin No. 159, issued by the Entomological Department.)

It is well known that the "green bug" (*Toxoptera graminum*, Rondani) wrought great damage to oats in the southern part of this State last spring, and that the attack on wheat was only less serious. Many responsible millers and grain men have expressed to us their firm conviction that the "green bug" was responsible for thousands of dollars' damage to oats and wheat. That it swept the oats and a large proportion of the wheat of Oklahoma, no one conversant with the situation will deny. In short, this insect demonstrated its ability almost to sweep certain of the cereal crops of whole states and forced us to recognize it as one of the large factors to be reckoned with in the production of wheat and oats. Yet on the advent of summer it so completely disappeared that there seemed to be hardly a "green bug" throughout the length and breadth of Kansas, Oklahoma, and Texas. Doubtless they disappeared through the attacks of their parasitic and predaceous foes and through flying away from the hardening grain to seek food more to their liking. During this time of scarcity the government agents were finding them in the Dakotas, on the volunteer wheat growing about elevators, and, as later examinations clearly showed, they were passing the summer in some parts of Kansas on volunteer oats and blue-grass.

This insect is pale green, with a dark, irregular line running down the middle of its back. The eyes are very black and show conspicuously against the pale green of the body; the feelers, except for a small portion at the base, are also black, while the horns at the rear of the body are only tipped with black. Many persons have confused with this "green bug" the dark green corn-leaf louse of the corn and Kafir-corn, or the rosy louse on the roots and stems of wheat, or the larger green louse so generally distributed over the wheat fields of this State, but distinguished by having the horns at the rear of the body completely blackened from tip to base, or green lice on rose bushes, hop plants, and box-elder trees, and as a result we have heard constantly through the press of "green bugs" springing up here and there through the State. Although this misconception caused a great many false alarms, it showed that the people were watching, and it was such watchfulness that brought to light the presence of the real "green bug" in

some of our wheat fields this fall. They are now working in at least three wheat fields in this State in sufficient numbers to kill the wheat in spots. The bugs have been found scatteringly in other fields of the same and, in some few cases, of other counties, almost always in wheat that lay near volunteer oats or blue-grass. Indeed, in some instances they were found on the blue-grass in the absence of wheat.

In each of the fields where the "green bugs" were abundant enough to kill the wheat, their parasitic foes had already been at work, and the large leaves of the volunteer oats and the small leaves of the young wheat plants were alike dotted with the swollen and blackened bodies of their victims. From the time the bugs were discovered the parasites worked more and more slowly, until with the advent of December they apparently became almost, if not entirely, inactive. The "green bugs," on the other hand, went forward and increased, slowly pushing the edge of the infested spot out into the healthy wheat. A matter of still greater significance than this increase is to be found in the fact that the latter are constantly producing small numbers of winged females, which, flying up, are caught by the wind and carried into other parts of the same field, or even into other fields. During each examination made of these spots, in from two- to three-week intervals, ranging from late fall until January 31, 1908, winged forms have been seen. The insects are known to occur in injurious numbers in three places in this State, but scatteringly in many others, and it is not impossible that they might be found in any part of the wheat belt.

These being the conditions, what may we expect next spring and summer? This is a question to which no one can give a definite reply, because (1) we do not know whether they can stand our winter, (2) we do not know whether their parasites can stand our winter, (3) we do not know what the character of this winter and spring will be. If they are able to stand the winter, and both they and their parasites have done so thus far, and are favored by a late, cold spring, or if all the parasites should be destroyed by the cold, they will probably increase and become a most serious menace to wheat and oats. Inasmuch as they usually pass the winter in our latitude in the egg stage, it is unlikely that they will be able to stand the cold of our climate; yet they may survive, and if they do we shall have to face the problem of controlling them. Also, we must remember that, contrary to previous knowledge, the insects wintered last year in the wheat fields of Oklahoma, and possibly in some cases in southern

Kansas, and that they are undoubtedly trying to do the same thing this year in the wheat fields of northeastern Kansas. The provident man makes provision against possible loss, and we cannot afford to do less. We owe it to ourselves to take such steps and make such preparation as our present knowledge shows to be necessary to control any outbreak that may occur.

A study of last year's experience, together with a knowledge of the present status of the "green bug," points clearly to certain measures that may be taken to prevent an outbreak. These spots where the "green bugs" are killing out the wheat, and where winged forms are being constantly produced, are simply centers of contagion from which the bugs go to other parts of the same field and to other fields. The fact that such spots bear the overwintering parasites in the swollen and blackened bodies of their victims should not deter us from treating them, for it is an easy matter to go over a small area and pick off the stalks that bear these blackened seed-like bodies, because at a touch the living "green bugs" will fall to the ground while the dead ones, being fixed to the stalk, will remain. This parasitized material should be gathered and strewn in other parts of the field or stored elsewhere for future reference, and the bug-infested wheat be turned under deeply with a plow, the soil being harrowed down smoothly and rolled so that none of the bugs can ever reach the surface. The other measure lies in the preservation, accumulation and multiplication of the "green bug's" enemies so that, in case the parasite fails to live over and the "green bug" appears where there are no parasitic enemies, we can introduce this friend and give it a chance to show whether it can destroy the lice for us. The Experiment Station is watching these matters closely and making every possible preparation to prevent serious damage from the "green bug" next year. The Experiment Station, however, needs the aid and coöperation of the people in all parts of the State in finding out where the "green bugs" are, and in carrying out these measures of prevention. Let every one who has a grain field keep a close watch and, whenever "green bugs" appear, send by mail to the Station Entomologist, T. J. Headlee, Manhattan, Kansas, specimens of bug-infested wheat or oats enclosed in a tight tin box or can, as well as a description of the way they work. Investigation and recommendations as to method of procedure in the particular case will follow in the shortest possible time. By coöperation and mutual understanding, we hope, in so far as possible, to prevent any outbreak of "green bugs" next spring and summer.

T. J. HEADLEE.

Farmers' Institutes for the Winter.

CIRCUIT NO. I.

Council Grove, Monday and Tuesday, January 27 and 28, Miller and Crabtree.
Osage City. Tuesday, January 28, Miller and Crabtree.
Madison, Wednesday, January 29, Miller and Crabtree.
Eldorado, Thursday, January 30, Miller and Crabtree.
Peabody, Friday and Saturday, January 31 and February 1, Miller and Crabtree.
Harper, Monday, February 3, Miller.
Medicine Lodge, Tuesday, February 4, Miller.
Conway Springs, Wednesday, February 5, Miller.

The above series of institutes was among the best yet held this year, with marked interest among the farmers of the communities, and an unusual increase in membership.

CIRCUIT NO. II.

Osawatomie, Monday, February 17, Crabtree and Wynkjer.
Cadmus, Tuesday, February 18, Crabtree and Wynkjer.
Bluemound, Wednesday, February 19, Crabtree and Wynkjer.
Richmond, Thursday, February 20, Crabtree and Wynkjer.
Edgerton, Friday and Saturday, February 21 and 22, Crabtree and Wynkjer.
Baldwin, Monday, February 24, Crabtree and Wynkjer.
Piper, Tuesday, February 25, Crabtree and Wynkjer.
McLouth, Wednesday, February 26, Crabtree and Wynkjer.
Nortonville, Thursday, February 27, Crabtree and Wynkjer.
Winchester, Friday, February 28, Crabtree and Wynkjer.
Valley Falls, Saturday, February 29, Crabtree and Wynkjer.

CIRCUIT NO. III.

Clifton, Monday, February 17, Miller and Avery.
Greenleaf, Tuesday, February 18, Miller and Avery.
Frankfort, Wednesday, February 19, Miller and Avery.
Centralia, Thursday, February 20, Miller and Avery.
Seneca, Friday, February 21, Miller and Avery.
Axtell, Saturday, February 22, Miller and Avery.
Onaga, Monday, February 24, Miller and Avery.
Emmett, Tuesday, February 25, Miller and Avery.
Overbrook, Wednesday, February 26, Miller and Avery.
Michigan Valley, Thursday, February 27, Miller and Avery.
Rossville, Friday, February 28, Miller and Avery.
Wamego, Friday and Saturday, February 28 and 29. Miller and Avery.

CIRCUIT NO. IV.

Gove, Monday, March 9, Miller and Kupfer.
Hoxie, Tuesday, March 10, Miller and Kupfer.
Waldo, Wednesday, March 11, Miller and Kupfer.
Barnard, Thursday, March 12, Miller and Kupfer.
Pleasant Hill, Friday, March 13, Miller and Kupfer.
Excelsior, Saturday, March 14, Miller and Kupfer.
Cawker City, Monday, March 16, Miller and Kupfer.
Wayne, Tuesday, March 17, Miller and Kupfer.
Miltonvale, Wednesday, March 18, Miller and Kupfer.
Longford, Thursday, March 19, Miller and Kupfer.
Talmage, Friday, March 20, Miller and Kupfer.
Solomon, Saturday, March 21, Miller and Kupfer.

The members of the two short-course classes, the domestic science and farmers', gave a reception to their friends last Monday night in Kedzie Hall. They had a good time.

Local Notes.

The juniors held a Valentine party in Kedzie Hall last Saturday night.

The machine-shop is putting up a fine trailing swing in the Women's Gymnasium.

Many students went home Friday night to spend the birthday of the Father of the Country with their parents and friends.

Mr. John E. Lewis, of Emporia, Kan., a sophomore of K. S. A. C., has been appointed as a cadet to the U. S. Military Academy at West Point, from the Fourth Congressional district of Kansas. He will enter on March 2, 1908.

Professor Henrietta Calvin gave a demonstration lecture to the ladies of the Manhattan Grange at the court-house last Wednesday afternoon. Her subject was "Fireless Cookery." The meeting was well attended in spite of the unfavorable weather.

Miss Cave and Miss McKirahan, of the Music Department, gave a piano recital Friday afternoon of last week in the Auditorium, and Miss Latimer gave one this Friday. The recitals were well attended and the audience highly pleased.

Engineer Lund, of the Heat and Power Department, reports that his boilers have consumed fifty-one car-loads—that is, 2300 tons—of coal since the first of November. All the coal used at this College comes from the State penitentiary, and is mined there by convicts.

Professor Headlee attended the meeting of the Missouri Valley Horticultural Society at the Coates House, Kansas City, last week, where he read a paper on the "Life and History of the Codling-moth and the San José scale." Professor Headlee also proposed means for eradicating the pests, and gave methods of spraying trees for protection against other insects and fungus growths.

The noted Poland-China breeder, Frank A. Dawley, had another sale of high-bred hogs at the College sales pavilion last Saturday. Fifty-one animals brought a total of $5042, or an average of nearly $105. The top price was brought by Venus, a two-year-old sow, which was bought by B. L. Gossick, of Fairfield, Ia., for $440. Two brought $250 each, Queen of Hearts going to Oscar Olson, of Brookville, Kan., and Chief's Daughter to S. P. Childs, of Fairfield, Ia. The lowest price bid for an animal was $32.

Professor Henrietta Calvin and her junior domestic science class went to Topeka last Monday to visit the packing-house and woolen mill. The party consisted of about twenty girls. The Wolff Packing Company met the class at the train in the morning, entertained them at breakfast at their offices, and for five hours they explained to them all the processes of meat preparation, qualities and cuts of meat, grading of lard, and observations on diseased meats. After luncheon the party went to the North Topeka woolen mills and observed the manufacture of cloth from the raw wool to the complete product.

V. Maelzer, '97, writes to Professor Walters from Goldburg, Idaho, that he is hard at work and in good health. He devotes his leasure hours to the study of geometry.

The girls of the Franklin society of K. S. A. C. entertained the boys of the same society with a leap-year party Tuesday evening. The skating-rink was rented for the evening, and after two hours of jolly fun each girl escorted a guest to the Manhattan Candy Kitchen, where a dainty luncheon was served. The society colors, red and white, were carried out in the serving of the refreshments.—*Mercury.*

The College Y. M. C. A. has started a vigorous campaign to raise the $7000 necessary to make the final payment on the new hall and to furnish it, and it looks as if they were able to make it. Five teams of students, consisting of ten men to the team, canvassed the College and the town and up to Thursday afternoon succeeded in raising $3,552.50. Of this sum $1,424.50 was raised at a mass meeting in the Methodist church on Sunday, $1,385.00 was raised among the students on Monday, $419.00 was collected on Tuesday, and $324.00 more on Wednesday. The canvass went on all the week without a stop. It was arranged that every time an additional $100.00 was raised the church bells of the city and the College bell should ring and the shop whistle blow, and there have been 21 triumphant bell concerts since Monday morning. A button scheme was also employed. To everyone who gave a dollar a red coat lapel button was given that bore the inscription "One of 2000." Let the good work go on!

Alumni and Former Students.

Glen E. Edgerton, '04, has just been graduated from the United States Military Academy at West Point, and stood highest in scholarship in a class of one hundred eight.

W. S. Sargent, '01, died of Bright's disease at the home of his parents in Manhattan, Saturday, February 15. Mr. Sargent's fatal illness succeeded an attack of scarlet fever, which developed while he was on surveying duty in Colorado.

Changes of address: Alberta (Voiles) Williams, '03, Bradley, Cal.; W. J. Lightfoot, '81, Manhattan, Kan.; Ben Skinner, '91, Atchison, Kan.; Chas. J. Dobbs, '90, 1062 Empire Block, Seattle, Wash.

An eleven-pound boy was born at 12 o'clock noon Saturday to Mr. and Mrs. O. I. Purdy, 2428 Lake street, Omaha, and for the first time in the history of Mr. Purdy's connection as field man with the *Journal-Stockman* the happy father was forced to relegate business to the inner recesses of his mind. He received word at Holdrege of the happy event and left for home immediately, amid the hearty congratulations of friends at that point.—*Journal-Stockman.* Mr. Purdy is a member of the class of '99, and is field man for *Daily Drovers Journal-Stockman*, South Omaha, Neb.

Board of Instruction (concluded).

JACOB LUND, M. S. (K. S. A. C.).....Superintendent Heat and Power Department
JOHN H. MILLER, A. M.....Superintendent Farmers' Institutes
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.).....Secretary
CLARENCE L. BARNES, D. V. M. (Cornell).....Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B. S. (Chicago).....Assistant Professor of Physics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.).....Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.).....Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard).....Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.).....Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.).....Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K. S. A. C.).....Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago).....Assistant Professor of Mathematics

---

Miss Ada Rice, B. S. (K. S. A. C.).....Instructor in English
Miss Ella Weeks, A. B. (U. of K.).....Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount).....Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University).....Instructor in Veterinary Science
Robert E. Eastman, M. S. (Cornell University).....Instructor in Horticulture
Miss Ula M. Dow, B. S. (K. S. A. C.).....Instructor in Domestic Science
William L. House.....Foreman of Carpenter Shop
Miss Gertrude Barnes.....Assistant Librarian
Louis Wabnitz.....Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.).....Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.).....Foreman of Foundry
Miss Emma J. Short.....Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.).....Assistant in Domestic Art
Theo. H. Scheffer, A. M. (Cornell University).....Assistant in Zoölogy
Miss Kate Tinkey.....Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C.).....Assistant in Printing
Roy A. Seaton, B. S. (K. S. A. C.).....Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College).....Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.).....Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale).....Assistant in Architecture and Drawing
Chas. Yost.....Assistant in Heat and Power Department
Earle B. Milliard.....Foreman of Blacksmithing
J. T. Parker.....Assistant in Woodwork
J. D. Magee, A. M. (Chicago).....Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit).....Assistant in German
Miss Florence S. Latimer, B. M. (Ferry Hall Seminary).....Assistant in Music
Miss Marjorie Russell (Mechanics' Institute).....Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.).....Assistant in Botany
Burton Rogers, D. V. M. (Iowa State College).....Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal).....Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.).....Assistant Chemist, Experiment Station
Herbert H. King, M. A. (Ewing College).....Assistant in Chemistry
Edw. C. Crowley, Ph. B. (Yale).....Assistant in Chemistry
Hugh Oliver.....Assistant in Heat and Power Department
Miss Charlaine Furley, B. A. (Fairmount).....Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (U. of K.).....Assistant in Preparatory Department
Leland E. Call, B. S. (Ohio State University).....Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University).....Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.).....Assistant in English
William C. Lane, B. S. (K. S. A. C.).....Assistant in Physics
Louis H. Beall, A. B. (Denison).....Assistant in English
Miss Flora C. Knight, A. B. (Uni. of Wyoming).....Assistant in English
Miss Grace H. Woodward (Boston School of D. S.).....Assistant in Domestic Science
Miss Nellie Cave.....Assistant in Music
Miss Anna I. McKirahan.....Assistant in Music
Miss Margaret Mack (K. S. N.).....Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.).....Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.).....Assistant in Botany
Charles E. Bassler, D. V. M. (K. S. A. C.).....Assistant in Veterinary Science
Miss Mary W. Hancock (Mechanics' Inst.).....Assistant in Domestic Art
S. W. McGarrah, A. M. (Grove City College).....Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.).....Assistant in Animal Husbandry
Arthur L. Peck, B. S. (Mass. Ag. Coll.).....Assistant in Horticulture
Kirk H. Logan, B. S. (U. of K.).....Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College).....Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University).....Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College).....Assistant in Preparatory Department
Loren Clark.....Assistant in Printing
Miss Bertha M. Johnston (Simmons College).....Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.).....Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University).....Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.).....Assistant in Agronomy
William Neill.....Dairy Herdsman
G. A. Porteous.....Herdsman
Wm. A. Lamb.....Poultryman
Floyd Howard.....Farm Foreman
William R. Lewis.....Custodian

Historical Society

THE INDUSTRIALIST

Vol. 34 No. 21

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

The Industrialist.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

TERMS AND VACATIONS.

FALL TERM, 1907, THIRTEEN WEEKS.

Thursday, Friday, and Saturday, November 28, 29, and 30.....Thanksgiving vacation
Thursday and Friday, December 19, 20.....Examination at close of term

WINTER TERM, 1908, TWELVE WEEKS.

Monday, January 6.....Examination for admission, at nine A. M.
Tuesday, January 7.....Winter term begins
Tuesday, January 7.....Short courses in agriculture and dairying begin
Saturday, February 1.....Annual intersociety oratorical contest
Saturday, February 15.....Mid-term examination
Thursday, March 19.....Annual concert
Thursday and Friday, March 26, 27.....Examination at close of term

SPRING TERM, 1908, ELEVEN WEEKS.

Monday, March 30.....Examination for admission, at nine A. M.
Tuesday, March 31.....Spring term begins
Saturday, May 9.....Mid-term examination
Tuesday, May 19.....Beginning of summer course in domestic science
Tuesday and Wednesday, June 16, 17.....Examination at close of year
June 14 to 18.....Exercises of Commencement week
Thursday, June 18, at ten A. M.....Commencement
June 19 to September 16.....Summer vacation

FALL TERM, 1908,

Wednesday, September 16.....Examination for admission, at nine A. M.
Thursday, September 17.....College year begins

BOARD OF REGENTS.

HON. A. M. STORY, President.....Manhattan
HON. J. O. TULLOSS ['99], Vice-President.....Sedan
HON. J. S. MCDOWELL.....Smith Center
HON. GEO. P. GRIFFITH.....Hays
HON. EDWIN TAYLOR.....Edwardsville
HON. W. E. BLACKBURN.....Anthony
PRES. E. R. NICHOLS, Secretary *ex-officio*.....Manhattan

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
CHARLES WM. BURKETT, M. Sc. (Ohio State University).....Director Experiment Station
JOHN D. WALTERS, M. S. (K. S. A. C.).....Professor of Architecture and Drawing
JULIUS T. WILLARD, M. S. (K. S. A. C.).....Professor of Chemistry, Vice-Director Exp. Station
BENJ. L. REMICK, Ph. M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B. S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A. B. (U. of K.), M. S. (K. S. A. C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph. M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S. B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M. S. (K. S. A. C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A. M. (U. of R.), Ph. D. (Univ. of City of New York).....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B. S. (K. S. A. C.).....Professor of Domestic Science
RALPH R. PRICE, A. M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A. M. (Central Wesleyan College).....Professor of Economics
JOHN V. CORTELYOU, A. M. (Uni. of Neb.), Ph. D. (Heidelberg).....Professor of German
OLOF VALLEY, B. M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D. V. S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B. S. A. (Iowa State College).....Professor of Animal Husbandry
WALTER E. KING, M. S. (Cornell).....Professor of Bacteriology
THOMAS J. HEADLEE, Ph. D. (Cornell).....Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U. S. A.....Professor of Military Science
JOHN C. KENDALL, B. S. (N. H. A. & M.).....Professor of Dairy Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art
MISS ANNE M. BOYD, A. B., Lib. Sci. (Millikin).....Librarian
ROBERT J. BARNETT, B. S. (K. S. A. C.).....Principal Preparatory Department

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., FEB. 29, 1908. No. 21

The Cigarette Boy.

(Second Paper.)

In a former article published in the INDUSTRIALIST I tried to show that with reference to the many thousands of "cigarette boys" to be found in this country the large amount of evidence accumulated led to the following conclusions: (1) Practically all these boys begin the cigarette habit clandestinely at a very early age—6 to 15 years—and with little or no thought of its evil consequences. (2) These boys are predisposed to diseases of the eyes, throat, lungs, heart, and stomach, and they are usually pale or sallow, thin in flesh, and nervous. (3) Comparatively few of them are able to discontinue the habit without some strong, carefully applied assistance from others, and then the undertaking is usually a desperate one. (4) Fifty pipe and cigarette smokers of this College during one term made an average in all subjects pursued, 17.5 per cent lower than fifty non-smokers of the same class rank.

General Statement.—Since the publication of the first article I have made a large number of sphygmograph records of persons of various ages, conditions and temperaments, and have been enabled to make some very interesting and suggestive comparisons. It might not be out of place to explain that the sphygmograph is an instrument with a clock-work-and-trigger mechanism, and that it is adjusted at the radial artery. The records are traced on a strip of smoked paper. This delicate instrument records very satisfactorily the comparative strength, regularity and nervousness of the heart beat. It will also show very quickly any changes in the heart movement resulting from either mental or physical stimuli. It may be said, too, that there is almost as much individuality in "heart writing" as there is in handwriting. The discussions in this article will be confined to an attempt to throw additional light upon the nature and condition of the cigarette smoker.

A Prostrated Heart.—There is much in the illustrations offered herewith to warrant the conclusion that the habitual cigarette

smoker's heart is very weak and feeble, excepting for the few minutes during which he is indulging the habit, and that the pulsations at this time are unduly excited. Plate A shows three records each of two different subjects. Numbers I to III show the heart action of a young man 19 years old who began smoking cigarettes at the age of 15, and who inhales the fumes. The three

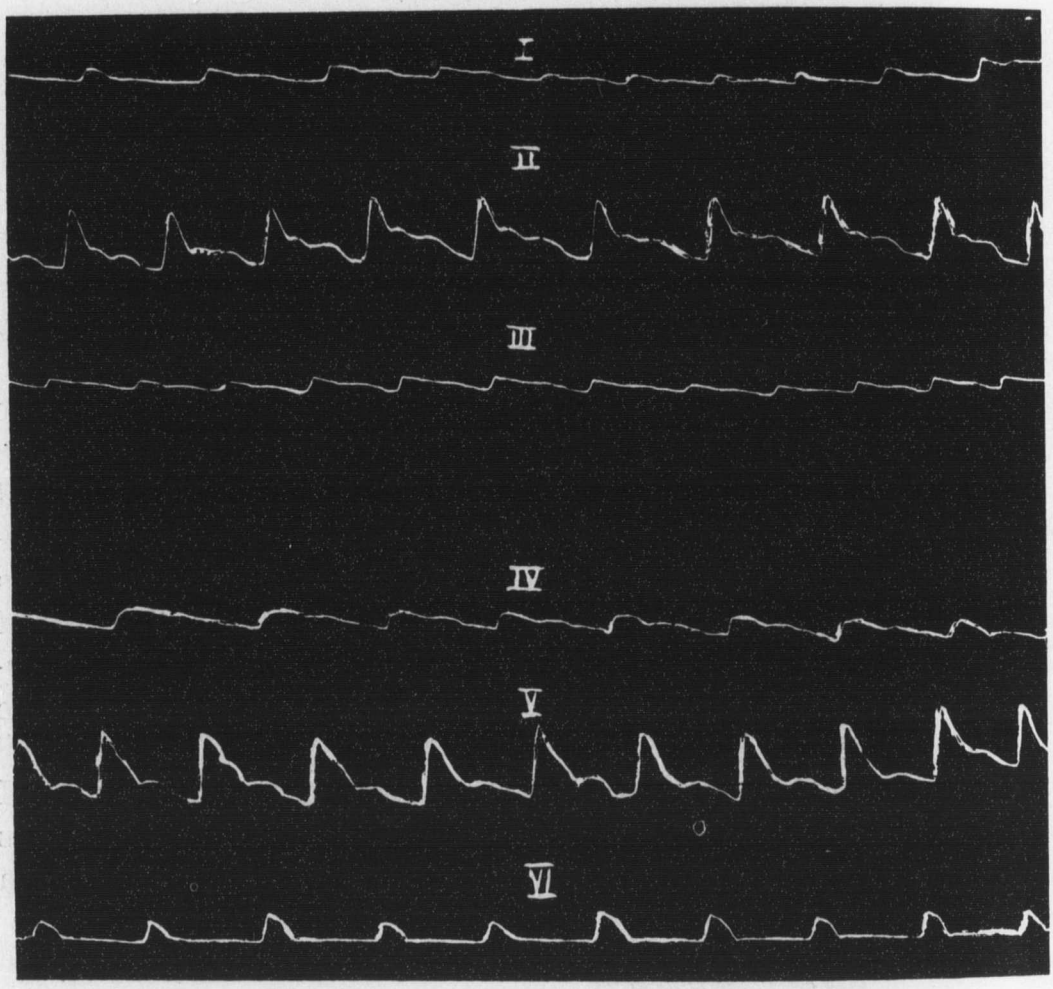


PLATE A.

records were taken without removing or readjusting the instrument, as follows: No. I, immediately before smoking, No II, during the indulgence of the habit, and No. III, fifteen minutes later, after the narcotic effect had become apparent. Now, by reference to plate B, No. III, we may observe how this young man's heart should record itself, for this is a tracing of the heart pulsations of a healthy non-smoker of the same age and temperament. Nos. IV to VI, Plate A, are representative of another inhaler 20 years old, who began the practice at 13. He now uses a strong pipe.

Plate B, Nos. I and II, are respectively before and after tracings of a very sensitive youth of 18 who has been smoking

only two years. Observe the skip in his heart beat at x and the corresponding partial skip under the stimulus of smoking. No. III, Plate B, as mentioned above, is the tracing of a strong, healthy heart of a young man of a somewhat choleric temperament. No. IV represents the phlegmatic temperament, a person who is cool and calculating. No. V. is the heart tracing of a strong, healthy, emotional young woman.

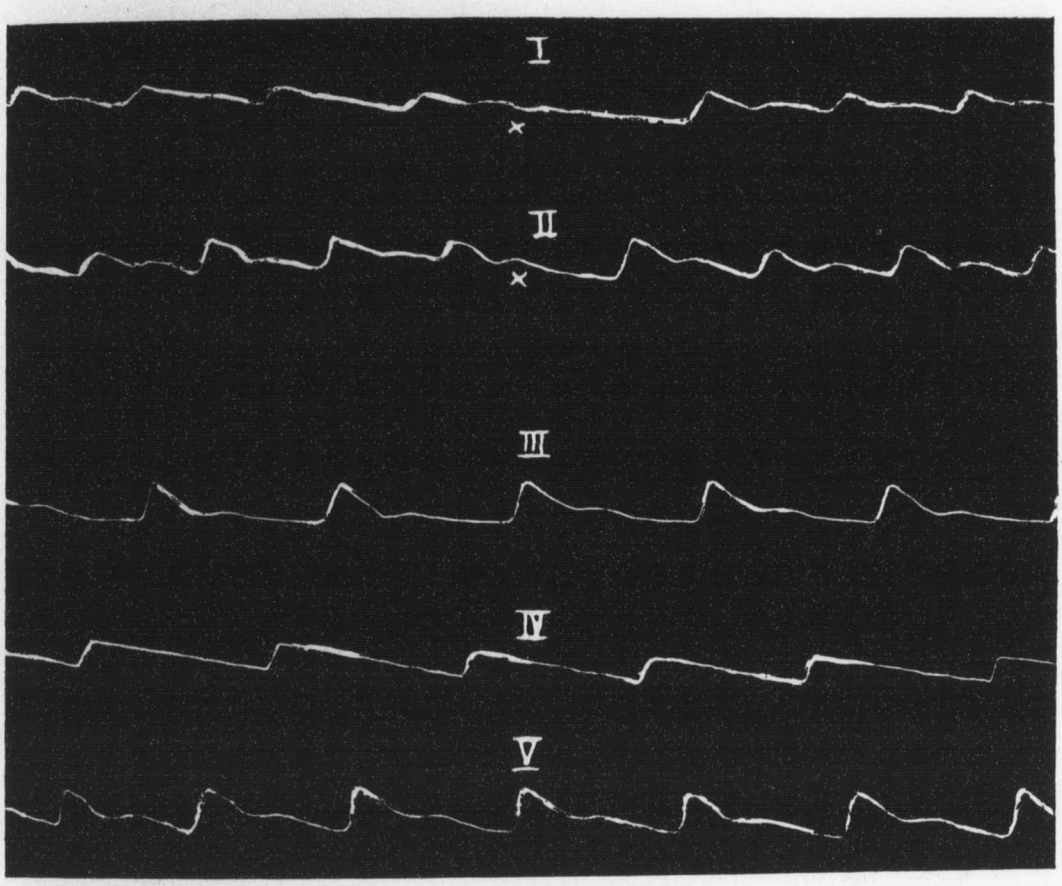


PLATE B.

Plate C, Nos. I and II, are the pulse records of a man of splendid physique, 36 years old and weighing 230 pounds. No. I was taken before, and No. II after smoking a cigar. He does not inhale. His heart responded readily to the stimulus, but, as the first tracing indicates, he does not suffer from any heart prostration between indulgences. No. III is the record of a person whose vitality is temporarily low from nervous fatigue. No. IV is the record of a young woman who is threatened with nervous prostration. No. V is representative of a heart weakened by long indulgence in the smoking habit. The young man in question began very early and continued the practice till his physician convinced him of the extreme danger threatening his

life. The pulse wave is nearly normal in length, but is entirely too weak. Under such a condition of the heart a man is capable of very little courage or aggressiveness.

Plate D, Nos. I to III and IV to VI, are the records of two young men 19 and 21 years old, respectively, both of whom have been heavy smokers for about six years. These tracings were

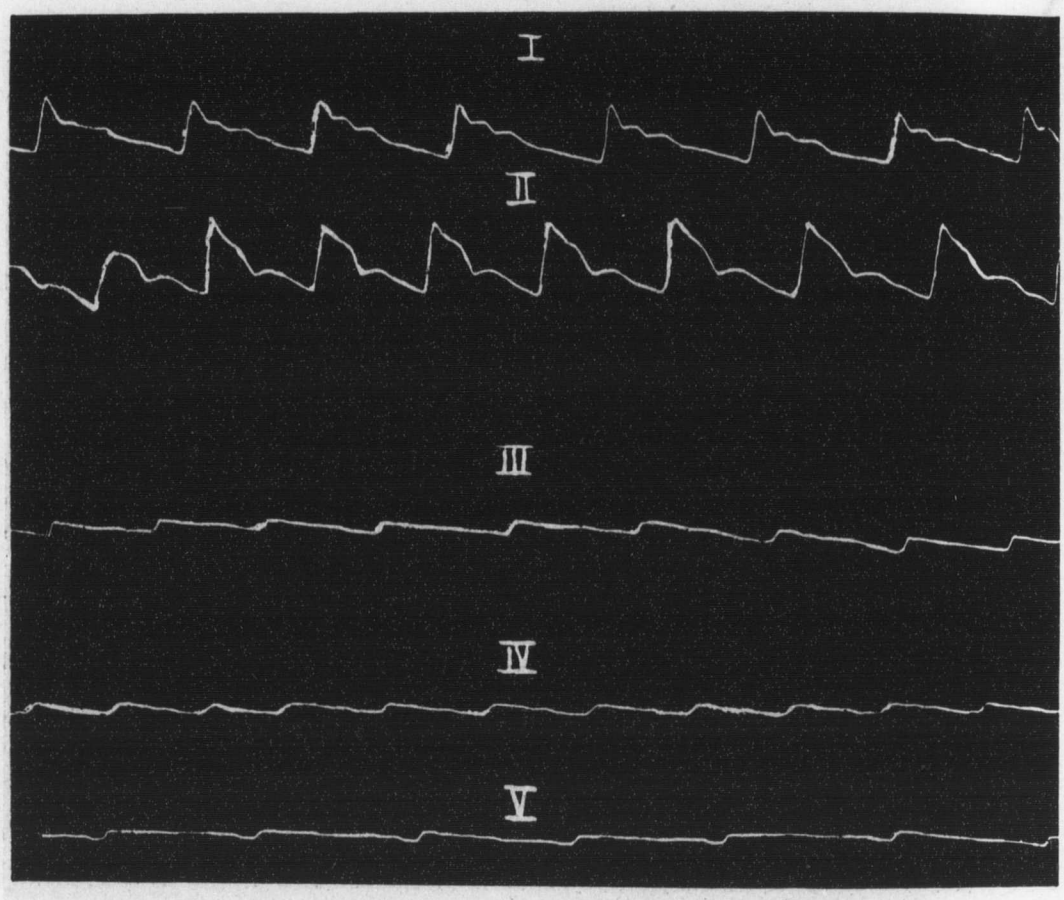


PLATE C.

made at one sitting, but should be read as follows: Nos. III and VI show the conditions after twenty-four hours abstinence—that is, the pulse stroke is longer but still very weak. Nos. II and V were taken while the subjects were smoking, and both show peculiar irregularities. Nos. I and IV were recorded about fifteen minutes after the indulgence and show evidence of the narcotic effect.

Conclusion.—From the foregoing evidence we are led to the conclusion that in the case of boys and youths cigarette smoking is very deleterious to the physical and mental well-being. Moreover, my investigations indicate that it makes practically no difference in the effects whether the victim uses a pipe or cigarettes, provided he inhales the fumes; and with very few exceptions the young

smokers are inhalers. The ordinary case exhibits about the following types of conduct: (1) While the craving is at its height the victim manifests much uneasiness and often excitation. (2) During the indulgence the cheek is alternately flushed and blanched, the respiration is considerably increased, and the

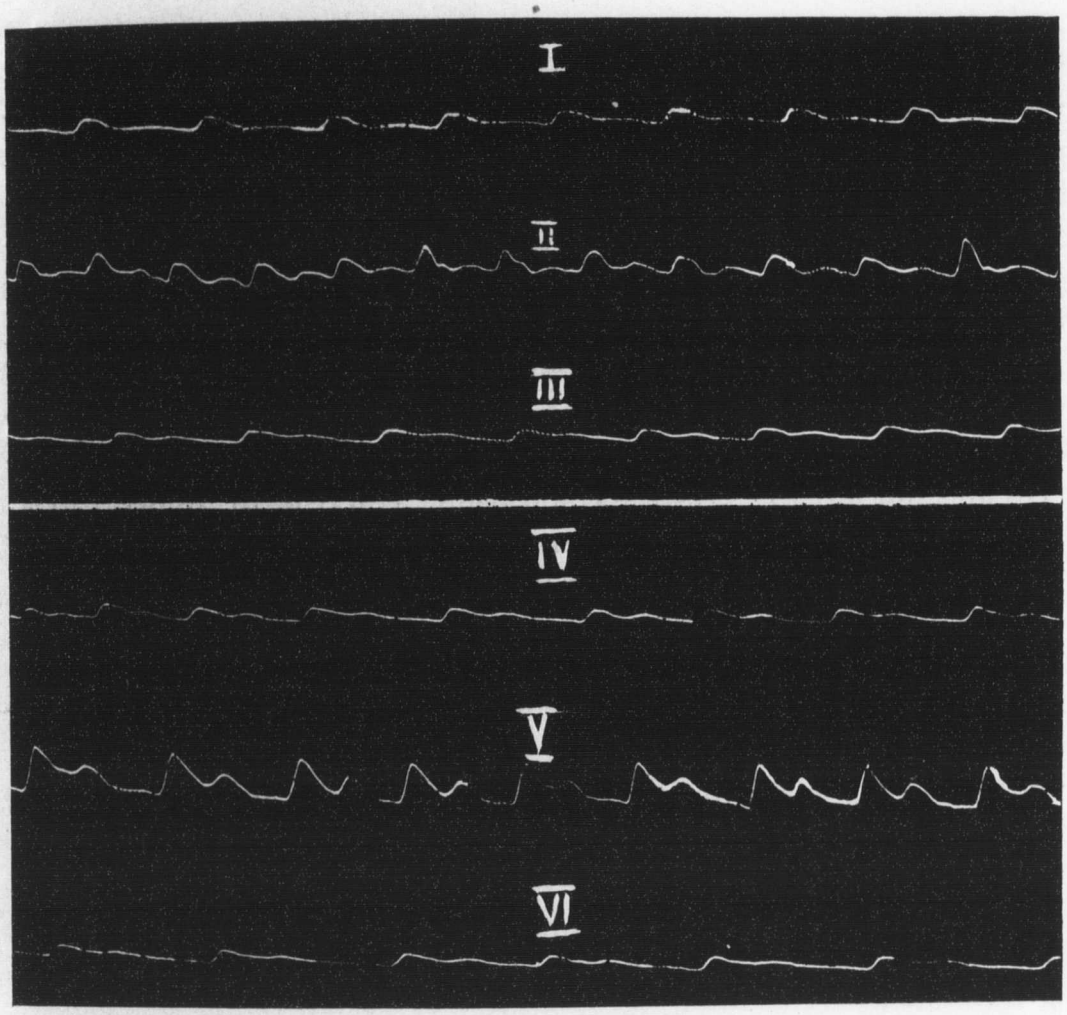


PLATE D.

hands tremble. (3) About twenty minutes after smoking the muscles become relaxed, the respiration slow and shallow, the skin on the face dry and sallow, and there is an apparent feeling of unconcern about everything. An eminent English physician* is authority for the statement that the cigarette smoker suffers partial paralysis of the nerve cells at the base of the brain at all times excepting while he is indulging his habit.

I am still advertising for details of actual and complete cures of the cigarette habit. Such cures are very rare.

WILLIAM A. MCKEEVER.

*Dr. Sims Woodhead, Professor of Pathology, Cambridge, England. See *Good Health*, September, 1907.

Engineering Experiment Stations at the Land Grant Colleges.

It is evident that larger and more definite provision should be made for technical and scientific investigations. The resources of the country should be properly developed and carefully and economically utilized. Much information is needed to make this possible. The prevention of waste of our forests, our sources of power, our fuels, our minerals, our materials of engineering and manufacturing and our labor need most careful and accurate investigation. The economic and safe use of materials, energy, or processes, can not be assured without continuous experimentation relating to the strength and durability factors of all materials entering into engineering structures or into manufacturing processes. It is more rational to invest money for facts at the start than to try to subsidize industries which need fundamental investigations. In this day investigation must be on a large scale and over longer periods of time than private means can afford. Investigations of importance should be prosecuted for the public weal and not left to private exploitation, which is in general looking at problems from a narrow money view and only incidentally, if at all, for the country's larger needs and growth.

There is a bill now before Congress that contemplates the establishment of engineering experiment stations at the so-called land-grant colleges (House Resolution No. 9230). The work outlined in this bill is in line with the work of the agricultural experiment stations, and the splendid work of these stations justifies the engineering experiment stations proposed. The interests involved are no less important, involving as they do even larger financial totals. Our technical and engineering interests are open to a foreign competition which our agricultural interests do not have to meet. We cannot depend upon the tariff to meet others in the world's commerce, but must depend upon superiority gained by wise and systematic investigation. Hence there is in one sense an even greater need for engineering experimental work than for the agricultural experimental work, which has done and is doing such valuable work for the country. Every argument for the agricultural experiment station is also one for the engineering and technical experiment station. The establishment and the continued protection of our export trade make continued investigation a necessity.

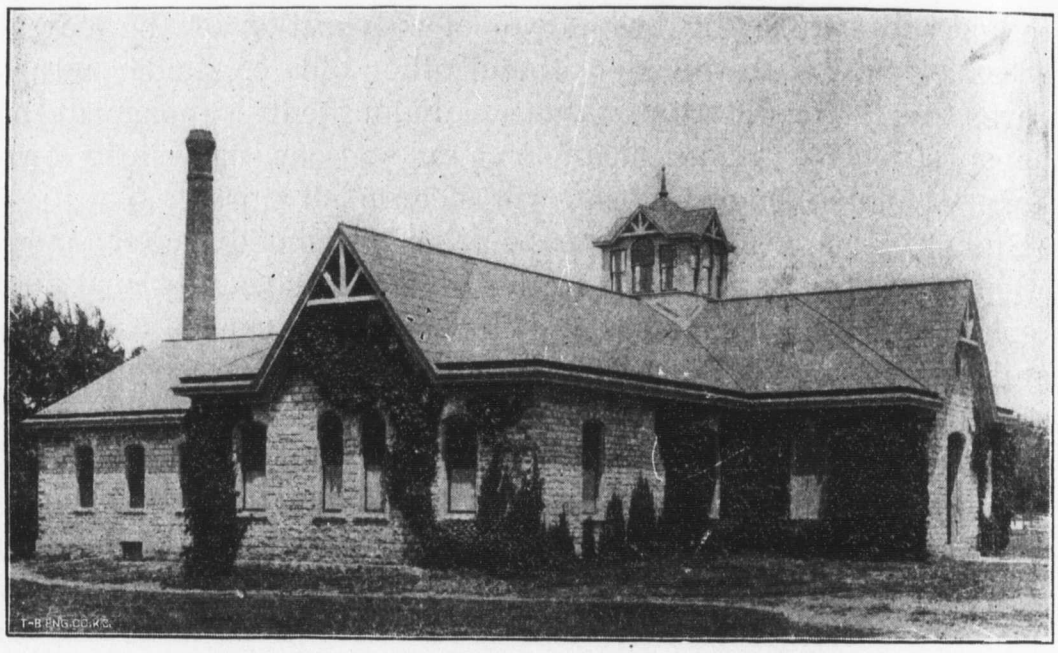
The technical investigations contemplated will be best made by distributed stations established at land-grant colleges, where similar stations already exist for agricultural experimentation. The problems of each commonwealth will be solved best by a station di-

rectly in contact with its own part of the country; also a state or territorial experiment station, being in most direct contact with the manufacturers, engineers, miners, etc., of the state, will doubtless receive invaluable aid and facilities free from such persons and interests for its experiments, as well as advice, etc. This method will secure the best financial coöperation of the states; the experience with the Morrill and other bills of similar nature proves this. The different states will undoubtedly supplement the appropriation for technical experiment stations, each in its own borders, and so federal money will accomplish more.

Such work is best done in coöperation with an educational institution where the experiment station staff and the educational staff overlap, and a high-grade staff of investigators can be most economically built up. The spirit of these institutions, having vigorous departments and laboratories of physics, chemistry, geology, biology and other sciences, will broaden and deepen the technical investigations based upon these sciences, giving the use of the facilities and apparatus of these departments, and often furnishing things that could not be obtained in any other way. There is also a great advantage in having such work done where there are engineering students who will later use the results for the future development of the county. Such students are also available as assistants, thus aiding the work immediately and training future investigators. This is apart from the great reflex benefit which these technical investigations will have on the educational institutions, a consideration which by itself would justify the appropriation as a supplement to the great work which these land-grant colleges are now doing. Again, the buildings, the shops, the laboratories, the libraries, the graduate schools and the men already a part of our land-grant colleges are all available as an aid to and as a part of such engineering experiment stations.

It is entirely reasonable that the same aid should now be extended to our industries as has been so wisely extended to our agricultural interests, and it is also reasonable to believe that such stations as are now proposed would grow up strongly under the same influences that have developed the sister stations in agriculture. For many years valuable investigations have been made in the engineering laboratories of our technical schools, but the problems of education are now so large that neither time nor funds are available for meeting the demands or needs of the industries for research. If results of investigations are to be credited they must be made or directed by persons of scientific attainments familiar with the needs of the applied sciences and the industrial in-

terests of the country. These men must have an open mind and unbiased opinions. Such men are available at our colleges and technical schools.



Where the K. S. A. C. girl gets her physical training.

The Institute Department has sent pamphlet No. 5 of the agricultural education series to the State Printer. It treats of "Bird Life with Relation to the Farm," and was prepared by Asst. Theodore H. Scheffer, of the Department of Zoölogy. It will be distributed to teachers and other parties interested, as soon as it is received.

The Manhattan city water-works furnished 4,400,000 gallons of water during the month of January. As the city water-works does not supply the College, and as only about two-thirds of the residences are connected with the city water system, the amount of water consumed in one month is about 1000 gallons per inhabitant. Twelve new residences were connected with the mains during the month.

Professor Walters has sold the house on Bluemont Avenue, recently occupied by Professor Potter, to County Superintendent Hannah Wetzig, who will move into it by March 1. Professor Potter will occupy the house recently built by Contractor John Winter, between Fourth and Fifth streets.

Local Notes.

The College Esperanto Club has a new bulletin-board in Anderson Hall.

The annual senior-junior reception will occur on St. Patrick's day —March 17.

There will be a students' corn-judging contest in Agricultural Hall on March 9.

The *Students' Herald* will issue a special Choral Union Concert number on March 19.

Five hundred sixty-eight pupils of the Manhattan schools were neither absent nor tardy during the month of January.

Last Friday night the College basket-ball team won a closely contested victory over the Glasco team. The score stood 32 to 23. The scheduled game was with the State Normals, but its team was unable to make connections.

The following promotions in the Cadet Battalion are announced: 2nd Lieut. Jno. F. O'Connor to be 1st Lieut. Vice 1st Lieut. Bruce S. Wilson appointed Battalion Adjutant. Battalion Sergeant Major Wm. Droge to be 2nd Lieut. Battalion Color Sergeant G. H. Brown to be 2nd Lieut. 1st Sergeant Anton H. Hanson to be Battalion Sergeant Major. Sergeant Paul Calvin to be Battalion Color Sergeant.

The junior class has been busy the past few meetings electing the board of editors for the '09 class book. Work will be begun at once in collecting ideas and materials, and it is proposed to make the '09 Annual the best ever at K. S. A. C. The board consists of seven members, as follows: Leon M. Davis, chairman; Elva Sykes, Mabel Hazen, Vera Halloway, J. E. Martin, R. M. Wyatt, A. G. Kittell.—*Herald.*

The Students' Volunteer Convention meets at Emporia Friday, Saturday and Sunday of this week. The delegates from this College are Secretary Richards, of the Y. W. C. A., Misses Marie Fenton, Elsie Tulloss and Clara Schield, and Messrs. W. L. Taylor, W. W. Stute, E. J. Watt, Frank Cockrell, E. S. Taft, Harry Colwell and Sec. William Davis, of the Y. M. C. A. Secretary Richards, of the Y. W. C. A., is on the program.

The alumni and former students of the Kansas State Agricultural College living in or near Topeka will hold their annual meeting on March 6, at 8 P. M. There will be a program and a banquet, and it is expected that from fifty to a hundred ex-students and "students-in-law" will participate. Several members of the Faculty intend to be present. Following is the program: Invocation. Instrumental solo, Miss Marion Gilkerson. President's address, E. G. Gibson. After College, What for the D. S. Graduate? Miss Cora McNut. Vocal solo, L. W. Hayes. Graduates as Housewives, Mrs. Wilma Rhodes. From Twilight to Dawn, C. W. Lyman. Instrumental solo, Mrs. J. W. Going. Address, Prof. J. D. Walters. Vocal solo, H. W. Jones. Song, "Alma Mater." C. M. Buck will act as toast-master.

The Library has recently received a number of very valuable books on landscape-gardening, among them Josiah Conder's two volume work on "Landscape-Gardening in Japan," and George S. Elgood's "Some English Gardens." There were received from Washington, D. C., three volumes of the "United States Statutes At Large." These statutes contain the recent pure-food laws, for which there is much inquiry from many quarters at present.

The Choral Union, under the direction of Professor Valley, will give a grand concert on the night of March 19 in the Auditorium. They will sing "The Swan and the Skylark." The program will begin with the rendering of Dudley Buck's "Te Deum in Eb" and Lohengren's "The King's Prayer." The solo part will be sung by Professor Valley himself, assisted by a quintet and the chorus. We know that we can promise the audience a rare treat with this concert, and ask that the readers of the INDUSTRIALIST will mark the date at once.

The United States Department of Agriculture has just issued an interesting document entitled, "A Soil Survey of Riley County, Kansas." The document consists of a pamphlet of thirty-five pages, most of which is devoted to a description of the soils found in this county, and a large soil map showing where the various soils described lie. The map shows that most of the county consists of Oswego silt loam, a fertile soil that will produce almost any crop. Most of this lies north and west of Manhattan on the uplands, while along the river and creek bottoms is a great deal of Wabash silt loam and Laural silt loam, the most fertile soil in this part of the county. The map also shows considerable rough, stony land, good only for grazing, in the immediate vicinity of Manhattan and northward along the Big Blue. The document is the work of experts, William T. Carter, Jr., and Howard C. Smith, who were here two years ago and made the survey.

The College Band gave a concert in Salina on Washington's birthday, and to judge from notices in the Salina papers the boys did themselves proud. Among other things the *Daily Journal* says: "It was the first time that Salina has had the pleasure of listening to the band from the big College at Manhattan. Those present were delighted to know that such an excellent musical organization is maintained among the attractions of 'The Pride of Kansas.' The band is not competing with the big professional bands, but is a band composed of as fine a set of clean and sturdy looking young men as can be found in the country—students gathered from all over our broad and beautiful prairies, who under the patient and skillful direction of Prof. R. H. Brown were able to acquit themselves most creditably with the rather difficult selections of the program. There were forty pieces in the make-up of the band, and it seemed to the writer as if the members were particularly well disciplined in ensemble playing, attack, crescendos, diminuendoes, and prompt and proper observance of what is considered good band work. The opening two selections of the concert, especially the second, the overture, were perhaps

the most pleasing of the evening, but all were given with good spirit and dash with numerous stretches of really artistic excellence, and Conductor Brown and members of the band have occasion for pride in their work. The solo work of the evening was confined to a cornet by Mr. J. C. McCanles, and barytone by Mr. John Z. Martin, each of whom acquitted himself with much credit, in spite of the fact that the high notes for the cornet were elusive to a most aggravating degree for Mr. McCanles, as they have a habit of doing on such occasions for more pretentious players. Mr. Martin's "Love Me and the World is Mine" was given in excellent voice, smooth, tuneful and with considerable power. He responded to an encore and was called for the third, but the audience had to be satisfied with two. It was a good concert and Salina much enjoyed the visit of this big bunch of students from our big school down the road, and it is hoped that they may come again when fewer other attractions will give them a larger house."

Alumni and Former Students.

Word has been received here of the birth of a son, February 16, to Mr. and Mrs. Fred Myers, of South Pasadena, Cal. Mrs. Myers will be better remembered in Manhattan as Miss Edith Perkins, ['00].—*Nationalist.*

S. I. Wilkin, third-year student in 1892, visited the College for two or three days this week on his way home from a business trip to Kansas City. He and his sister and brother are prospering in their new home near Hoxie.

H. B. Holroyd, '03, is one of the authors of Forest Service Circular No. 42, "Tests of Vehicle and Implement Woods." The circular is of special interest to users of farm machinery and implements, as it contains much information concerning the woods commonly used, including results of breaking tests.

W. B. Thurston, '06, and Stella Campbell, '06, were married Wednesday evening, February 19, at 6 o'clock, at the home of the latter in Goodrich, Kan., by the Rev. O. B. Thurston. The young couple will make their home in Enid, Okla., where Mr. Thurston is employed as head butter-maker by the New State Butter Company.

Mr. and Mrs. Edward W. House, who arrived here last week for a visit with Mr. House's parents, Mr. and Mrs. W. L. House, left Friday for their home in Kansas City. Mr. and Mrs. House were just married last Wednesday morning at 8 o'clock, at the home of Mrs. House's parents, on the West Side, and then left on the afternoon train for Manhattan for a few days' visit. Mr. House ['02] is a Manhattan boy who has many friends here who wish to extend their congratulations and best wishes. He is now employed as pattern-maker and millwright at Proctor & Gamble's in Kansas City. He and his bride are now making their home on the West Side, 241 South Tenth street.—*Nationalist.*

Program for Winter Term, 1908, Showing Instructors, Subjects, and Number in Class.

INSTRUCTOR.	FIRST HOUR.	SECOND HOUR.	THIRD HOUR.	FOURTH HOUR.	FIFTH HOUR.	SIXTH HOUR.	SEVENTH HOUR.	EIGHTH HOUR.
Walters	Projective Drawing....T 17 Des. Geom....W+F 28, Th.+S 28		Specials....3	Specials 5	Architectural Composition....12			
Weeks	F. H. Drawing....Tu. 10, W 16 Object Drawing....Th. 24, F 11, S 52		F. H. Drawing....Tu. 23, W 26 Object Drawing....Th. 33, F 29		F. H. Drawing....Tu. 14, W 26 Object Drawing....Th. 38, F 31			
Brandt	Geom. Draw....Th. 29, F 10, S 25 El. Projection....Tu. 14, W 5		Geometrical Drawing....S 43 El. Projection....Th. 16, F 16 Adv Projection....Tu. 6, W 10		Geometrical Drawing..Tu. 27, W 26 El. Projection....Th. 19, F 17			
Willard	Ag. Chemistry Lab....M 16		Chemistry II..51	Chemistry II..39	Ag. Chemistry Laboratory....Mon. 18, T+T 12			
King	....	Chem I....44	....	Chemistry II..33	Chem. IV...39-45	Chem. II....39		
Crowley	Chem. IV Lab....T+T 32, W+F 51		Chemistry I Lab....Tu. 43, Th. 41 Chemistry II Lab....W 13, F 23		....	Chem. I....67 Chem. II Lab..W 18, Th. 27, F 23, S 38		
....	....	....	....	....	....	....	....	....
Remick	Int. Calc....11	Trigonometry....32	Int. Calc....18	Int. Calc....16	....	....	....	....
Andrews	Algebra III....38	Algebra IV....41	Diff Calc....28	....	Algebra III...28	....	....	....
Zeininger	Algebra II....41	Algebra I....37	Algebra II....32	Algebra IV....25	....	....	....	....
Magee	....	....	Geom. I....40	Geom. I....25	Algebra I....35	Algebra I....33	....	....
Nesbit	....	....	Geom. II....29	Algebra I....27	Geom. II....31	Geom. II....30	....	....
McGarrah	Geom. I....36	Geom. I....20	....	....	Algebra II....20	Algebra II....19	....	....
Porter	Algebra II....14	....	Algebra III....42	Trigonometry....33	....	Algebra III...31	....	....
Eyer	....	D. C. Mach....23	....	....	D. C Lab....W+F 11, Th.+S 12		....	....
Hamilton	Physics III....28	....	Physics IV....15	El. Physics....49	Physics Lab....T+T 26, W 15		....	....
Lane	Physics Lab....Tu. 29, W 9, Th. 20		....	....	Physics Laboratory....Tu. 22 A. C. Mach. Lab..W+F 11, Th.+S 12		....	....
Logan	Physics II....18	El. Physics....47	Physics II....15	Physics II....19	Physics Lab....T+T 22, W+F 20		....	....
Roberts	....	....	Ag Botany....31	....	....	....	....	....
Freeman	Plant Morph..13	....	....	....	....	....	....	....
Bergman	....	Botany I....24	....	Botany I....29	....	....	....	....
Stevens	....	....	....	....	Botany I....18	Botany I....22	....	....
Monroe	....	....	....	....	Pt. Morph. Lab....T+T 13		....	....
McKeever	....	Phil. of Ed....12	Psychology....18	El. Psych...S 121	El. Psy. T 42, Th. 45, S 50	El. Psych...W 88	Psychology....16	....
McCormick	Engineering Laboratory....M 7				Mechanical Drawing VI....F 6			
	Reinforced Concrete....M p. m. 3				Engineering Laboratory....Tu. 7		Reinforced Concrete....Tu. 3	
Potter	Thermo. I....7	Ap. Mech. I...11	Kinematics....37	Kinematics...,42	Engineering Lab. II....M+W 7		....	....
					Engineering Laboratory IV....Th. 12, F 9			
Seaton	....	....	Ap. Mech. I...23	Ref. and Cold St...20	Mech. Draw. III...T+T 19, W+F 16		Concrete....3	
House	Woodwork I....T+T 27, II W+F 44		Woodwork I....T+T 37, II W+F 44		Woodwork I....T+T 42, II W+F 43		Woodwork S. C....T+T 40	
	Woodwork, Short Course....M 41				Woodwork Short Course....M 42			
Wabnitz	Machine Shop....M 6		....	....	Mach. Shop. T 10, W 7, Th. 1, F 12, S 10		Mach. Shop...S 12. T+T 16, W+F 10	
Ridenour	Foundry....Th. 7, F 1, S 11		Foundry....F 4, S 6, W 1		Foundry....S 10		Foundry....S 10, F 2	
Milliard	Blckg I....T+T 15, W+F 20, II S 10		Blckg. I....T+T 15, II W 5		Blckg. I....T+T 5, W+F 20, II S 14		Blckg. I....W+F 9, II T+T 5, S 18	
Dickens	Hort....48	....	....	Hort....41	....	....	....	....
Eastman	....	Forestry....9	....	Silviacult....9	Forest Practice....6		....	....
Ahearn	....	....	Hort. S. C....48	....	Floriculture....Tu. 29, W 31		....	....
Peck	Hort. S. C....31	....	....	Hort. S. C....33	....	....	....	....
Brink	Eng. Lit. II....29	Rhet. II....33	Eng. Lit. I....21	Eng. Lit....35	....	....	....	....
Ward	Adv. Comp....25	Adv. Comp....40	....	....	Readings....31	Readings....31	....	....
Rice	Rhet. I....36	Classics....31	Rhet. I....31	Readings....30	....	....	....	....
Beall	....	Readings....40	Classics....42	....	Adv. Comp....29	Adv. Comp....32	....	....
Leonard	....	....	Adv. Gram....29	Comp....23	Classics....38	Adv. Gram....23	....	....
Knight	Readings....30	Comp....32	Readings....31	Adv. Comp....33	....	....	....	....
Ten Eyck	....	....	....	....	....	....	....	....
Call	Agriculture...30	Soil Physics....6	Crop Prod....42	....	....	Agriculture...40	....	....
Knight	Agriculture...43	Farm Mech...45	....	Agriculture...49	Grain Judging....T+T 38, W+F 34		....	....
Schafer	Crop Prod....44	Crop Prod....35	....	....	....	....	....	....

Calvin	Cookg. S. C...17	Elect. D. S....25	H. Mgt.....19	H. Mgt.....33		Home Nurs....30	
Dow			Cooking Short Course (Dinners).....		16	Physiology....12	
Willis			Cooking S. C. (Dinners).....		17	Home Nurs....58	
Russell		Inv. Cooky....26				Domestic Science II.....	T+T 20, W+F 18
Woodward	Cooking.....	20-14	Cooking.....		16-15	Cooking.....	14-11
Johnston	Cooking Short Course.....	18	Cookery Short Course.....		16	Physiology....37	
Price	Civics.....42	E. History.....42	Civics.....43	E. History.....41			
Kammeyer	Pub. Spkg. II..42-43	Pub Spkg. I...27-23		Economics....33			
McCheyne						Pub. Spkg. I...52-48	
Cortelyou	German I.....35	German V..21-27	German II.....25	German II.....17		German V.....5	German Sp.....4
Meinzer	German II.....30	German II.....20	German I.....17				German I.....23
Valley	Singing.....20	Singing.....25	Singing.....39	Singing.....15		Singing.....25	Singing.....32
Brown	Violin.....23	Mandolin.....21	Violin.....14	Guitar.....15		Band Inst.....33	Violin.....24
Latimer	Piano.....14	Piano.....14	Piano.....18	Piano.....14		Piano.....14	Piano.....13
Cave	Piano.....13	Piano.....13	Piano.....18	Piano.....16		Piano.....13	Piano.....11
McKirahan	Piano.....13	Piano.....10	Piano.....15	Piano.....16		Piano.....14	Piano.....15
Schoenleber		Materia Med..15	Obstetrics.....6				
Barnes	Surgery IV....3	Medicine II.... 8		Surgery I.....7		Clinic.....	15
Goss		Physiology....17	Physiology....54	Path. Gen'l....10		Physiology.....9	Lab...W 31, F 31
Rogers	Anatomy V....9	Anatomy II...13	Dissection.....		13	Phys. Lab..W 31, F 31	
Bassler	Dis. F. An.....47			Dis. D. An.....16			
Kinzer	Breeds.....44-37	Elective.....8				Stock Judging.....	81
Wheeler		Feeding.....47	Feeding.....39	Feeding.....38			
Elling	Breeds.....37	Breeds.....35		Breeds.....48		Stock Judging.....	143
King		Bact.....20-33	Elective.....6			Bact. Lab.....	T+T 22, W+F 12
Dean			Entomology Laboratory, W 19, S 21			Entomology...41	
Scheffer	Geology.....21		Zoölogy.....29			Zoölogy Lab.....	T+T 17, W+F 14
Boice							Military Sci..449
Kendall	B. & C. Mkg...23	Feeding.....12	Breeds.....12	Marketing.....10		Dairy Practice.....	23
Rickman-Rodell	Printing.....2	Printing.....7	Printing.....9	Printing.....9		Printing.....10	Printing 9
Barbour			Phys. Train...21	Phys. Train....25		Phys Train....19	Phys. Train....33
Becker	Dressmaking.....	39	Dressmaking.....		40	Dressmaking.....	
Cowles	Dressmaking.....	39	Sewing II.....		18-16	Sewing I.....	9-11
Stump	Sewing I.....	19-15				Sewing II.....	19-12
Hancock	Sewing II.....	W+F 18	Sewing II.....		T+T 18	Dressmaking.....	
Barnett	Bookkeeping..38	Bookkeeping..30	Bookkeeping..41			Bookkeeping..23	
Holroyd	Geom. II.....31	Algebra II....32	Geom. II.....26	Algebra II....27			
Short	Med. Hist.....40	Anc. Hist.....35	Anc. Hist.....43	Med. Hist.....33			
Furley		Grammar A...26	Grammar A...22	Adv. Gram....31			Composition..18
Reynolds	Phys.Geog.II..34	Phys.Geog.II..34		Phys.Geog.I..27			Phys.Geog.II.31
Mack	Anc. Hist.....36		Med. Hist.....37			Med. History..38	Anc. History..26
Gordon			U. S. Hist. A..14	U. S. Hist. A..14		Anc. History..30	U. S. Hist. B..27
Harner		Phys.Geog.I..30		Phys.Geog.II..30		Phys.Geog. II. 30	Phys. Geog. I. 25
Train		Algebra IV...34	Algebra I.....37	Algebra IV....25			Geometry I ...30
Biddison		Arithmetic B..29				Geography....24	
Wenkheimer	Arithmetic A..38					Arithmetic A,24	
Akin				Physiology....21			Physiology....14
Wharton	Adv. Gram....23	Classics.....24					
Fleming	Grammar B....28						
Lund						Boiler and Engine Practice.....	23

Board of Instruction (concluded).

JACOB LUND, M. S. (K. S. A. C.) ..... Superintendent Heat and Power Department
JOHN H. MILLER, A. M. ..... Superintendent Farmers' Institutes
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.) ..... Secretary
CLARENCE L. BARNES, D. V. M. (Cornell) ..... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B. S. (Chicago) ..... Assistant Professor of Physics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.) ..... Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard) ..... Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.) ..... Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.) ..... Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K. S. A. C.) ..... Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago) ..... Assistant Professor of Mathematics

---

Miss Ada Rice, B. S. (K. S. A. C.) ..... Instructor in English
Miss Ella Weeks, A. B. (U. of K.) ..... Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount) ..... Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University) ..... Instructor in Veterinary Science
Robert E. Eastman, M. S. (Cornell University) ..... Instructor in Horticulture
Miss Ula M. Dow, B. S. (K. S. A. C.) ..... Instructor in Domestic Science
William L. House ..... Foreman of Carpenter Shop
Miss Gertrude Barnes ..... Assistant Librarian
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.) ..... Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.) ..... Foreman of Foundry
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
Theo. H. Scheffer, A. M. (Cornell University) ..... Assistant in Zoölogy
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C.) ..... Assistant in Printing
Roy A. Seaton, B. S. (K. S. A. C.) ..... Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College) ..... Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale) ..... Assistant in Architecture and Drawing
Chas. Yost ..... Assistant in Heat and Power Department
Earle B. Milliard ..... Foreman of Blacksmithing
J. T. Parker ..... Assistant in Woodwork
J. D. Magee, A. M. (Chicago) ..... Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit) ..... Assistant in German
Miss Florence S. Latimer, B. M. (Ferry Hall Seminary) ..... Assistant in Music
Miss Marjorie Russell (Mechanics' Institute) ..... Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.) ..... Assistant in Botany
Burton Rogers, D. V. M. (Iowa State College) ..... Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal) ..... Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.) ..... Assistant Chemist, Experiment Station
Herbert H. King, M. A. (Ewing College) ..... Assistant in Chemistry
Edw. C. Crowley, Ph. B. (Yale) ..... Assistant in Chemistry
Hugh Oliver ..... Assistant in Heat and Power Department
Miss Charlaine Furley, B. A. (Fairmount) ..... Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (U. of K.) ..... Assistant in Preparatory Department
Leland E. Call, B. S. (Ohio State University) ..... Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University) ..... Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.) ..... Assistant in English
William C. Lane, B. S. (K. S. A. C.) ..... Assistant in Physics
Louis H. Beall, A. B. (Denison) ..... Assistant in English
Miss Flora C. Knight, A. B. (Uni. of Wyoming) ..... Assistant in English
Miss Grace H. Woodward (Boston School of D. S.) ..... Assistant in Domestic Science
Miss Nellie Cave ..... Assistant in Music
Miss Anna I. McKirahan ..... Assistant in Music
Miss Margaret Mack (K. S. N.) ..... Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.) ..... Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.) ..... Assistant in Botany
Charles E. Bassler, D. V. M. (K. S. A. C.) ..... Assistant in Veterinary Science
Miss Mary W. Hancock (Mechanics' Inst.) ..... Assistant in Domestic Art
S. W. McGarrah, A. M. (Grove City College) ..... Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.) ..... Assistant in Animal Husbandry
Arthur L. Peck, B. S. (Mass. Ag. Coll.) ..... Assistant in Horticulture
Kirk H. Logan, B. S. (U. of K.) ..... Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College) ..... Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University) ..... Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College) ..... Assistant in Preparatory Department
Loren Clark ..... Assistant in Printing
Miss Bertha M. Johnston (Simmons College) ..... Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.) ..... Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University) ..... Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.) ..... Assistant in Agronomy
William Neill ..... Dairy Herdsman
G. A. Porteous ..... Herdsman
Wm. A. Lamb ..... Poultryman
Floyd Howard ..... Farm Foreman
William R. Lewis ..... Custodian

THE INDUSTRIALIST

Historical Society

Vol. 34 **No. 22**

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

The Industrialist.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

TERMS AND VACATIONS.

FALL TERM, 1907, THIRTEEN WEEKS.

Thursday, Friday, and Saturday, November 28, 29, and 30.....Thanksgiving vacation
Thursday and Friday, December 19, 20.....Examination at close of term

WINTER TERM, 1908, TWELVE WEEKS.

Monday, January 6.....Examination for admission, at nine A. M.
Tuesday, January 7.....Winter term begins
Tuesday, January 7.....Short courses in agriculture and dairying begin
Saturday, February 1.....Annual intersociety oratorical contest
Saturday, February 15.....Mid-term examination
Thursday, March 19.....Annual concert
Thursday and Friday, March 26, 27.....Examination at close of term

SPRING TERM, 1908, ELEVEN WEEKS.

Monday, March 30.....Examination for admission, at nine A. M.
Tuesday, March 31.....Spring term begins
Saturday, May 9.....Mid-term examination
Tuesday, May 19.....Beginning of summer course in domestic science
Tuesday and Wednesday, June 16, 17.....Examination at close of year
June 14 to 18.....Exercises of Commencement week
Thursday, June 18, at ten A. M.....Commencement
June 19 to September 16.....Summer vacation

FALL TERM, 1908,

Wednesday, September 16.....Examination for admission, at nine A. M.
Thursday, September 17.....College year begins

BOARD OF REGENTS.

HON. A. M. STORY, President.....Manhattan
HON. J. O. TULLOSS ['99], Vice-President.....Sedan
HON. J. S. MCDOWELL.....Smith Center
HON. GEO. P. GRIFFITH.....Hays
HON. EDWIN TAYLOR.....Edwardsville
HON. W. E. BLACKBURN.....Anthony
PRES. E. R. NICHOLS, Secretary *ex-officio*.....Manhattan

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A. M. (University of Iowa).....President
CHARLES WM. BURKETT, M. Sc. (Ohio State University).....Director Experiment Station
JOHN D. WALTERS, M. S. (K. S. A. C.).....Professor of Architecture and Drawing
JULIUS T. WILLARD, M. S. (K. S. A. C.).....Professor of Chemistry, Vice-Director Exp. Station
BENJ. L. REMICK, Ph. M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B. S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A. B. (U. of K.), M. S. (K. S. A. C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph. M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S. B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M. S. (K. S. A. C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A. M. (U. of R.), Ph. D. (Univ. of City of New York).....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B. S. (K. S. A. C.).....Professor of Domestic Science
RALPH R. PRICE, A. M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A. M. (Central Wesleyan College).....Professor of Economics
JOHN V. CORTELYOU, A. M. (Uni. of Neb.), Ph. D. (Heidelberg).....Professor of German
OLOF VALLEY, B. M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D. V. S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B. S. A. (Iowa State College).....Professor of Animal Husbandry
WALTER E. KING, M. S. (Cornell).....Professor of Bacteriology
THOMAS J. HEADLEE, Ph. D. (Cornell).....Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U. S. A.....Professor of Military Science
JOHN C. KENDALL, B. S. (N. H. A. & M.).....Professor of Dairy Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art
MISS ANNE M. BOYD, A. B., Lib. Sci. (Millikin).....Librarian
ROBERT J. BARNETT, B. S. (K. S. A. C.).....Principal Preparatory Department

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., MAR. 7, 1908. No. 22

Maintaining Soil Fertility.

From all over the State we have received letters of inquiry which read something like this: "What shall I do for my land? It will not produce profitable crops of wheat. Good crops of wheat have been grown on this land for the last twenty years. What manure can I apply in order to restore its fertility and productiveness? Is there any commercial fertilizer that can be profitably used on wheat?" To these letters we make various replies, but invariably recommend rotation of crops. The trouble is that the land is "wheat sick." It is only partially exhausted in fertility, but it needs a change of crops. The humus and nitrogen of land which is long cropped to wheat becomes deficient and must be restored by manuring or by the growing of grasses and legume crops. It has been the history of wheat farming in this country that all wheat lands have finally ceased to produce profitable crops, and the wheat-growing area has moved ever westward. Now, however, practically all land available for the growing of wheat has been taken, and if wheat growing is to continue to be profitable there must be a change in the methods of farming. Wheat cannot be grown continuously on the same land without exhausting the fertility of the soil for the production of this crop, but by a proper rotation of crops in which the humus and nitrogen taken out by the grains are restored again in the growing of annual legumes, grasses, alfalfa, and clover, with the return to the land of the manure made by feeding to stock on the farm the coarse fodder and a part of the grain produced, it is possible to maintain the fertility of the soil and continue to produce large crops of wheat.

Experiments at the Ft. Hays Branch Station of the Kansas State Agricultural College give results greatly favoring the rotation with the cultivated crops. As an average for two years, wheat after wheat yielded 7.4 bushels per acre; wheat after barley, 6.8 bushels per acre; wheat after oats, 9.7 bushels; wheat after Kafir-corn, 13.4 bushels; wheat after soy-beans, 13.9 bushels; and wheat after summer fallow, 22 bushels per acre. Similar experiments have been carried on at the Manhattan Station for the past

three seasons, but with less pronounced results. Wheat after corn, Kafir-corn and sorghum gave a less yield than wheat after wheat, while wheat after millet, flax and soy-beans gave a little larger yield than wheat after wheat.

A practical and scientific rotation of crops should include the following:

1. Grasses and perennial legumes.
2. Pasture + manure a year before breaking.
3. Cultivated crops.
4. Grain crops + annual legumes for green manure.

The following are some rotation plans which may be adapted to the wheat-growing sections of the State.

ORDER OF CROPS ON EACH FIELD.

Year.	*Plan No. 1.*	*Plan No. 2.*
1.	Grass	Grass
2.	Pasture (manured)	Grass
3.	Wheat	Pasture (manured)
4.	Wheat	Pasture (manured)
5.	Legumes and forage	Wheat
6.	Wheat	Wheat
7.	Wheat + legumes as green manure	Wheat
8.	Spring grains (seed to grass)	Wheat

Year.	*Plan No. 3.*	*Plan No. 4.*
1.	Legumes and forage	Alfalfa and grass
2.	Wheat	Alfalfa and grass
3.	Wheat + legumes as green manure	Pasture (manured)
4.	Spring grains (manured)	Pasture (manured)
5.	Legumes and forage	Corn
6.	Wheat	Spring grains
7.	Wheat + legumes as green manure	Wheat
8.	Spring grains (seed to grass)	Wheat (seed to alfalfa)

If plan No. 1 does not leave the land long enough to grass the farm may be divided into two parts and either Plan No. 2 or Plan No. 3 may be used on each division of the farm for eight years, when the systems may be interchanged, the first taking the place of the second and the second of the first. Observe that in the above systems of rotation it has been the plan to introduce grass and perennial legumes or annual legumes, cultivated crops and small grains as the essential crops in rotation. When the grasses and perennial legumes have been left out, the annual legumes and green manuring crops have been introduced to take their place as far as possible. All of the plans allow the growing of money crops (namely, crops which may be turned readily into cash) upon

at least one-half of the farm each year. The other half of the farm is kept in crops which have a renovating effect upon the land, and which may be turned into money indirectly, by feeding them to stock.

We may add that in our judgment the farmer who carries out such a system of rotation, growing wheat on only half of his fields each season, will produce more wheat on his farm in the next twenty years than he would by continuously growing wheat, as is the present practice, and the crops introduced in rotation would simply give an additional profit equal to the value of the crops; while at the end of the twenty years, provided live stock is kept on the farm to consume the forage produced and some of the grain, and the manure is returned to the soil, the land will be as fertile and even more capable of producing large crops than it may be at present.

Soil-renewing crops which may be successfully grown in rotation with wheat in Western Kansas are alfalfa, Bromus inermis, and cow-peas. With good seed and a proper seed-bed a careful farmer should be almost as sure of establishing a successful stand of alfalfa or Bromus inermis as the average farmer is of getting a stand of wheat or oats. Many may not agree with us in this statement, since failure to get a good stand of grasses or alfalfa has often been the experience of many farmers. It is true, however, that these failures are often due either to poor seed or to carelessness on the part of the farmer in not preparing a proper seed-bed.

In order to grow any crop successfully it is necessary to plant good seed, and this is especially true of grasses and alfalfa. No one should sow poor alfalfa or grass seed, but purchase the very best grade of seed which seedsmen offer for sale, even at an advanced price. It is usually better to delay sowing a year rather than to run the risk of loss by sowing an inferior grade of seed.

In Western Kansas spring sowing is more apt to be successful than fall sowing, and our preference is to sow early in the spring, just as soon as the soil is in fit condition to germinate the seed. None of the common grasses are injured by frost, and the earlier the seed can be sown in a favorable seed-bed the more likely the grass is to start and make a good stand. With alfalfa there is some danger of the earliest seeding being destroyed by frost, although as a rule we prefer to take the chances of frost by early seeding rather than the chances of injury by dry weather, hard rains, or hot winds, which are apt to destroy the later seedings.

Next to good seed, the seed-bed is the most important factor in establishing a good stand of grasses or alfalfa. An ideal seed-

bed for grasses should not be deep and mellow; rather the soil should be mellow but finely pulverized only about as deep as the seed is sown, an inch and a half to two inches, while below the seed the soil should be firm, making a good connection with the subsoil. This offers the most favorable conditions for the germination of the seed and the growth of the young grass and alfalfa plants. The firm soil below the seed allows the capillary moisture to be drawn up to the seed, while the mellow soil above the seed offers the most favorable condition for the warming of the soil and for the oxygen of the air to reach the seed; and these three factors, moisture, heat, and oxygen, are essential for the germination of all seeds. Meanwhile the mulch of mellow soil acts as a blanket to keep the moisture from escaping, and at the same time gives the most favorable conditions for the delicate little plant to unfold and push upward into the air and sunshine. Also the firm subsoil gives the proper root-hold and environment which conduces to a rapid and strong growth of the young roots. Grasses and alfalfa are not only much more likely to start poorly in a deep, loose seed-bed, but even after starting the young plants are much more likely to "freeze out" in winter or "burn out" in summer than will be the case in the shallow, firm seed-bed described above.

In preparing a seed-bed for the sowing of grass or alfalfa in Western Kansas it may be desirable to miss a crop preceding the sowing of the grass or alfalfa, practicing what is called "summer culture" for a season previous to seeding, and thus not only conserve the moisture in the soil but also prepare available plant-food for the early use of the young grass and alfalfa plants. In any case the preparation of the seed-bed for grass and alfalfa should begin several months before the seeding. A good seed-bed for spring seeding may be prepared by plowing late in the summer or early in the fall and cultivating at intervals with the harrow or Acme harrow during the fall and early spring. An inexpensive and yet practically ideal seed-bed may be prepared by simply disking and harrowing corn-stubble land, or other land which has been well tilled the previous season in the growing of some cultivated crop. Cow-peas or soy-beans are excellent crops with which to precede the sowing of grass or alfalfa. A. M. TENEYCK.

The three-day dairy classes conducted by the Farmers' Institute and Dairy Departments of the College were very successful. Only four towns succeeded in organizing classes, but others are now getting interested.

Freehand Drawing in the College.

The past twenty years have brought about many changes in the courses of study in our schools and colleges. Conspicuous among these has been the introduction of drawing into all grades of school work—drawing of many kinds; drawing from nature and from still life, drawing from models and from life, geometrical drawing, scientific drawing, and designing of all sorts, from simple surface ornaments to complex machine designs. What does it all mean and why was it not done before, and to what end does it now serve?

The general aim of education may be said to be to fit one for efficiency in mature life by providing an ideal for life's activities. The census report for 1900 shows life's activities in that year to be as follows:

In agriculture.....	35 per cent.
In trade or transportation.....	16 per cent.
In manufactures and industrial arts....	24 per cent.
In professions—teachers, lawyers, etc...	4 per cent.
In personal service—servants, etc.....	19 per cent.

Education should, therefore, fit one for some one of these activities and at the same time insure him a degree of contentment and happiness in work. That the education offered to the past generations did not adequately do this was shown by the fact that from three widely separate sources came the complaint that the young people leaving the schools and colleges showed a lack of the qualities desired in the world into which they came as workers.

First, the farmers complained that the boys and girls were abandoning the farms for the cities; second, the merchants and the manufacturers in the cities averred that these same young people could not do any one thing well and had no proper sense of their responsibilities; third, the professional men insisted that our educational system did not make efficient and wholesome citizens.

It is not fair to assume that the public-school system was wholly to blame. There are two other sources to which we may trace reasons for this condition, namely, the apprentice system and former conditions in the homes. Formerly the apprentice system aided in the training for efficient citizenship by teaching patience, thoroughness and discipline in some one line of work. In the homes of a generation past, men and women alike found it necessary to know how to do almost every kind of domestic labor, and to do it efficiently. In consequence, the young people received a wholesome training in the handicrafts. Modern labor-saving inventions have changed all this. The discipline of the old self-supporting home has gone, the discipline of apprenticeship has dis-

appeared, the discipline of the public school is pronounced inadequate.

During the very recent past few years some changes have been instituted in the arrangement of the school and the college curriculum. The fact had come to light that the education of the past had been over-emphatic on the side of literature and the languages, and a great cry for industrial education has arisen. This calls for a readjustment of the time devoted to these two lines of work. If education is to bear directly upon usefulness in life's work, then the twenty-four per cent of people employed in industrial and manufacturing occupations certainly represents as strong demands for industrial education as the four per cent of literary workers represents for language study.

Drawing is the expressional language of all industry. It is vitally connected with all branches of manufacture. It is the study of form or shape and is a means of expressing such in a way far more graphically than can possibly be done by words. The people who use drawing are of three classes.

1. *Mechanics*, including carpenters, machinists, engineers, surveyors, scientists, etc., people who use descriptive or constructive drawing.

2. *Designers*, including architects and craftsmen, artisans who in their work combine matters of construction and taste.

3. *Artists*, who make pictures and who must learn to see and reproduce exact appearances of form and color.

These lead to three classes of arts, namely:

1. Mechanical arts.
2. Industrial arts.
3. Fine arts.

The function of the drawing course is to coöperate with other courses and with all manual training work in placing students in touch with these three classes of arts, and to teach what the ideals of these activities are, and what the use and power of drawing is among mature people in active life who use it professionally.

Utility and beauty must go together. Industrial education must open the minds of working men and women to the beauties of the world and to the glories of artistic achievement. It must help us to hold to our ideals. There is a sign of the awakening of all people in the fact that more beautiful surroundings are desired, more readable books sought for, and a saner and more unselfish citizenship demanded. Good sense begins to control the appointments in domestic use, and to dominate in dress, in wall-paper, in house furnishing, in book-binding, in illustrations for periodicals,

and in scores of other things. If art education is effective, both producers and consumers will insist that all these things be rational and elevating. Art is neither a superfluous nor a luxurious matter, but a national resource, a matter of common application. Certain European countries to-day are making a marked effort as a matter of industrial life and death to rationally unite art with all industries.

The crudeness and ugliness of much in our American architecture and furniture indicates a corresponding crudeness in our national character, which must be removed by patient and careful education before we can attain to the excellence of some of the other nations. As thrift is a necessary virtue, so is the refining influence of art. "Bad spelling and faulty phraseology are no worse than poor taste in one's neck-tie or house appointments."

Whether a student will eventually use drawing himself to any extent or not, it is "an important business of his life to appreciate the products of the people who do use it," and this appreciation the drawing course must teach him. As far as the public school is concerned, the aim is not to make expert machine designers or architects or artists, but to teach intelligent respect for the ideals of these professions from the drawing side just as they already respect other professions from the language side.

These facts indicate that all pupils should, at least to a limited extent, study the art side of drawing as well as the constructive side. The would-be artisan and the intending engineer should study freehand drawing and be glad to learn a little about an artists and a designers way of seeing and thinking as well as how to represent screws and bolt-heads. Too little attention to any of these forms of drawing has been given in schools and colleges until recent years. The losses incurred by the dropping of the apprentice system among the industries have not yet been made good in the schools. A few years ago President Eliot said: ". . . It is monstrous that the school which prepares for college should give four or five hours a week for two years to Greek and no time at all to drawing." Many of our secondary schools as yet give no time to drawing, but as fast as possible these things are being righted and conditions are slowly improving.

The mechanical arts will not be discussed here, but a statement of some of the possibilities to be attained in freehand and design work in institutions receiving students with little or no preliminary training may be of interest. Dr. Henry Turner Bailey says: "Anything connected with school life which promotes genuine applied art is to be encouraged; art divorced from life is

like religion divorced from life—a phantom and an insidious foe." Many of our young people of college years have not had the advantages that the younger brothers and sisters are now having, and it is for these students that our freehand drawing courses are to assist in the training of eye and hand to actual attainment in genuine applied art and in the appreciation of the works of others, even to masterpieces of form and color. The student is taught to understand the underlying principles, to select and choose with discrimination, to decide upon the treatment and accent most suitable for his particular task. He soon learns that his fingers are *not* all thumbs, and that his eye is capable of measuring and judging with a degree of accuracy that he would formerly have believed impossible, and he delights in originating as well as truthfully copying. He learns to appreciate the fact that drawing demands as great powers of judgment as of imitation, and that as much is due to the eye as is to the hand.

Principles of perspective in surfaces and in edges and the foreshortening of irregular shapes become interesting subjects of mastery. He soon learns to distinguish between an artist's and a scientist's habit of seeing and thinking in drawing, and to realize that sometimes one method and sometimes the other is best. He sees that the principles are universal, and he rejoices in his own power in depicting them.

In studying design, the principles of rhythm, balance and harmony are illustrated and applied; the study of the proportions of the printed page, the width and tone of picture mats and picture frames and the study of the adaptation of natural forms to decorative treatment give him real satisfaction.

In the end it all means that the student shall be to a greater or less degree enabled to express, pictorially, simple and common objects, or as a matter of design to originate tasteful decorations, and shall be able to appreciatively enjoy the work of others.

"Fine art is that in which the hand, the
head and the heart of man go together."

ELLA WEEKS.

The Department of Physics has made arrangements with the U. S. Weather Bureau for establishing a weather station at this College. Weather observations were made and recorded here for nearly fifty years, but the bureau has now agreed to regularly send its weather predictions to this station. The weather signals are now flying at the flag-staff of Anderson Hall.

An Opportunity for Girls.

It is plain to see that opportunity does come more than once to people and is coming continually, faster than it can be realized and grasped. Science and invention has done so much, has multiplied opportunities for every one and has not omitted the farmer. It is evident that the next generation of farmers will have taken many steps in advance of this if they take advantage of the helps and opportunities offered. The agricultural colleges in the various states are doing much for the farmer and his family. Contests of various kinds that have been carried on have promoted interest, and stimulated effort to excell in agricultural pursuits. Country boys and girls are being urged to accept some of the opportunities that are at their doors, and not only urged but offered compensation. That is, the ones that were in the contest are offered prizes. But the prize is of little consequence in comparison with the benefit that is accrued by every one who enters the contests and does his best, whether he wins or not.

In Kansas the Agricultural College is promoting and directing these contests all over the State and a greater effort is being made than ever to make them a success and to interest the boys and girls in them in every county. About five thousand boys and girls have entered these contests in the last two years. The corn and potato contests have been very successful and the desire and expectation is to interest more of the girls in contests of some kind—cooking, fruit-canning, serving, or the growing of flowers. Those who enter these contests will be fully instructed through the literature that will be sent out to them from the Agricultural College and also by correspondence. In Iowa they have a girls' cooking contest every year at the state fair grounds. The contest is for girls from 15 to 21 and each one is to mix and bake one dozen baking-powder biscuits and must cook one beefsteak, and give the recipe for making the biscuits and the method and time of baking and reasons for same; and the same for the beefsteak. They are allowed an hour for the work, and a half hour for writing recipes and reasons. When the opportunity comes to the Kansas girl to enter a contest along any of these industrial and educational lines she will not let it pass her if at all within her power.

Mr. Bradford Miller, who has so successfully conducted the corn contests in Shawnee county, is desirous of interesting the girls in some kind of contest this year, and has received the following communication from Mrs. Henrietta Calvin, professor of domestic science at the Agricultural College, upon the subject:

"I am glad to attempt to suggest something along the line of girls' work to be carried out in connection with the corn contest.

"I have thought that if the girls would compete in canned fruit and vegetables and in jellies and preserves they might be interested in the scientific principles involved in the preservation of food. To make this successful a certain sized jar should be required, for instance, one-pint jar. Each girl should agree to use no preservative other than the sugar and vinegar and to do all the work herself. She should begin with the earliest fruits and vegetables, such as asparagus, strawberries, and gooseberries, and continue the work through the entire season, making as large and varied collection as possible. She should inform herself as to the cause of fermentation, decay, and mold, and prepare a paper covering these general subjects. I have considered this preservation of food of more value than bread-making because the work is more evenly distributed over a greater length of time, and success and failure can not result from a single day's efforts. In no county of the State would the girls have a better opportunity than they would in Shawnee, and the energetic girl could make a beautiful collection. Her fruit would not be injured for her family's use during the winter, as it is not necessary to open fruit to judge its condition. A small amount of the jelly might have to be injured, as it is not always possible to tell the consistency of jelly by its outward appearance. I am hoping to put forth a small bulletin on the preservation of food for the benefit of girls who become interested.

"In regard to your previous corn contest, I want to say that of all those I saw this year, none were equal to yours, and as for the pocket knives, a man must have forgotten how he felt when he was a boy if he did not think those knives served many a good purpose."—*Kansas Farmer.*

The Students' Coöperative Association is making arrangements to erect a suitable business block on their lot at the northeast corner of Manhattan Avenue and Moro street. It is the intention of the board of managers to build a one-story stone or brick structure, 80 by 50 feet, with a store front on each street. The block will be built so that another story can be added later. The preliminary plan provides for a large store room, a dining-hall, a kitchen, and several smaller rooms. All parts will be heated by furnace and lighted by electric light. The block will be completed before September.

Local Notes.

The winter term will close March 27.

The Y. W. C. A. and Y. M. C. A. held a joint reception Monday night.

Professor and Mrs. Geo. F. Freeman moved Tuesday into their new house on Humboldt street.

Professor Potter was on the sick list last Saturday. His classes were looked after by J. S. Richards.

The Choral Union holds three rehearsals each week, in preparation for the annual concert March 19.

Assistant Scheffer took his geology class over the hills Monday to study the surface strata of Manhattan township.

A recent letter received from Miss Cecile Allenthorp, '07, tells of the death of her father at their home in Casey, Ill., on February 25.

Professor Walters attended the Topeka alumni banquet last Friday night and gave an address on, "A Third of a Century of Intense Work and Growth."

The lady members of the Faculty are "talking up" a Monday excursion to Fort Riley. As this is leap year, the INDUSTRIALIST hopes that their plan will realize.

Prof. O. E. Olin, formerly of the Department of English at this College and at present professor of pedagogy of Akron (Ohio) College, will lecture at the Congregational church March 16.

Mr. J. H. Miller, superintendent of college extension, will address the Northeastern Kansas Teachers' Association at Leavenworth on April 3 on "The Pedagogical Standing of Agriculture in the Public Schools."

Mr. C. A. Kupfer, Forestry Division, Department of Agriculture, Washington, D. C., will assist the superintendent of farmers' institutes for two weeks, beginning March 9, talking on "Forest Tree Planting in Kansas."

Professor Walters' text-books on industrial drawing (16 consecutive envelopes) are now being published by the American Book Company. The professor intends to revise the course for a new edition next summer.

Mr. H. W. Avery, '91, of Wakefield, Kan., assisted in a series of farmers' institutes from February 17 to February 29 in northern and eastern Kansas, and Superintendent Miller reports that farmers were delighted with the lectures and asked to have him come again.

Contractor Stingley has been able to do considerable work on the new Domestic Science and Art Hall the past two weeks. The stone-work of the north wing is now completed and the carpenters have commenced to erect the frame-work and rafters of the roof. The stone-work of the south wing is finished all except the pilaster gables.

The pay-roll, exclusive of the salaries of the professors and assistants, for February reaches a total of $3,474.46. Of this amount the students drew $1,184.17 and the other employees $2,290.29.

The students of the Electrical Engineering Department have organized a local chapter of the Students' Branch of the American Institute of Electrical Engineers. There are about twenty or thirty branches in the United States. The following officers were elected at the first regular meeting: President, W. A. Enfield; secretary, Assistant Logan; treasurer, J. Simpson.

Miss Jane E. Bartlett, an accomplished portrait painter, has arrived here from Boston to paint the life size portraits of the three deceased presidents of the College: Professors Denison, Anderson, and Fairchild. When completed the pictures will be permanently hung in the President's office. The expenses for painting the pictures will be met by the Alumni Association of the College.

Tuesday of last week was the last day for the soliciting of funds for the Y. M. C. A. building. The committee made a good day's work of it, and secured additional pledges amounting to about $1500. President Nichols and Geo. S. Murphey succeeded in bringing in subscriptions to the amount of $700, which was the largest amount of pledges obtained by any of the workers during the day.

Superintendent Miller, of the Farmers' Institute and Extension Department, went to Chapman on Monday, March 2, for a farmers' meeting, and went to Paola on Friday, March 6, to address the Paola Commercial Club that evening and the school district officers and teachers on Saturday. A special farmers' meeting was called for 11 o'clock for the purpose of reorganizing the farmers' institute there.

The Horticultural Department has been favored by a visit from Mr. John H. Maher, of Devils Lake, North Dakota. Mr. Maher is an attorney and banker at Devils Lake, but intends to go into the business of raising trees, and has spent several days investigating the methods practised by our Horticultural Department. Mr. Maher expressed himself as highly pleased with the work of the department, and as having a very instructive visit at the College.

There are rumors afloat in some parts of the State that Manhattan is full of smallpox patients. We can say to our friends and to the parents and relatives of our students that this is positively not the case. The city records show that a total of all smallpox cases from September, that is the beginning of the College year, to date is only eleven, and that all the patients recovered very rapidly. These cases were concentrated in two or three houses, and there is no fear that the disease will spread. A city of six thousand inhabitants can hardly go through a winter without sporadic cases of the measles, the scarlet fever and the smallpox, and there has been less trouble in Manhattan from this source the present winter than usual. Students who are taking care not to expose themselves are in no danger.

The Department of Zoölogy has received a very fine skin of a Cinnamon bear cub from William Sargent, '01, who directed before his recent death that it should go to the College museum. The pelt will be mounted by Assistant Theo. H. Scheffer.

Alumni and Former Students.

Gertrude Rhodes, '98, has been visiting for some weeks with Bessie (Locke) Noble, '98, in Hobart, Okla., and will visit her sister, Mrs. McMillan, of Leavenworth, Kan., before returning to Manhattan.

C. F. Doane, '96, of Albert Lea, Minn., visited the College this week. Mr. Doane is kept busy in connection with the cheese investigations for the Division of Dairying, United States Department of Agriculture.

Changes of address: C. J. Axtell, '04, 308 Summit Avenue, Schenectady, N. Y.; Geo. Spohr, '06, 1105 Tracy Avenue, Kansas City, Mo.; H. G. Maxwell, '06, 37 E. Poplar Avenue, Columbus, O.; Clara Pancake, '03, Mount Airy, Ga.; Minnie L. Copeland, '98, 923 East Sixth street, Tucson, Ariz.; R. W. Clothier, '97, 923 East Sixth street, Tucson, Ariz.

Lieut. Glen Edgerton, '04, who recently graduated from the Military Academy at West Point, after holding his position at the head of his class for four years, is now enjoying a three-months' furlough and is spending a part of it visiting at home. He will be in the engineering corps of the army, but does not yet know to what point he will be detailed for duty.

Hans Peter Nielsen, third-year student in 1898, stopped off on his way home from Topeka last week to visit the College and renew acquaintance with old friends. He is farming near Denmark, in Lincoln county, having returned from Alaska three years ago. Even in the few years since he visited the College he found many changes had taken place, and the familiar faces are few.

Mr. Arthur Helder, '04, has accepted a position as secretary of the city park commission, Kansas City, Mo. He will have direct charge of the work in landscape gardening, and the advantage of working with Geo. E. Kessler, landscape architect and civil engineer for the park board of Kansas City, Mo., and Kansas City, Kan. Mr. Helder will assume the duties of his new position the first of April.

E. F. Nichols, '88, professor of experimental physics, Columbia University, New York, has accepted the invitation tendered him to deliver the triennial address before the Alumni Association next June. Professor Nichols has probably become more distinguished by discoveries in pure science than any other graduate of the institution, and it is fortunate that his duties permit him to make this western trip. It is likely that his address will be to a degree flavored by his life work; this is, at least, to be expected of one characterized by deeds rather than words.

Board of Instruction (concluded).

JACOB LUND, M. S. (K. S. A. C.) ..... Superintendent Heat and Power Departmen
JOHN H. MILLER, A. M. ..... Superintendent Farmers' Institutes
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.) ..... Secretary
CLARENCE L. BARNES, D. V. M. (Cornell) ..... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B. S. (Chicago) ..... Assistant Professor of Physics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.) ..... Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard) ..... Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.) ..... Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.) ..... Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K. S. A. C.) ..... Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago) ..... Assistant Professor of Mathematics

---

Miss Ada Rice, B. S. (K. S. A. C.) ..... Instructor in English
Miss Ella Weeks, A. B. (U. of K.) ..... Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount) ..... Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University) ..... Instructor in Veterinary Science
Robert E. Eastman, M. S. (Cornell University) ..... Instructor in Horticulture
Miss Ula M. Dow, B. S. (K. S. A. C.) ..... Instructor in Domestic Science
William L. House ..... Foreman of Carpenter Shop
Miss Gertrude Barnes ..... Assistant Librarian
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.) ..... Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.) ..... Foreman of Foundry
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
Theo. H. Scheffer, A. M. (Cornell University) ..... Assistant in Zoölogy
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C) ..... Assistant in Printing
Roy A. Seaton, B. S. (K. S. A. C.) ..... Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College) ..... Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale) ..... Assistant in Architecture and Drawing
Chas. Yost ..... Assistant in Heat and Power Department
Earle B. Milliard ..... Foreman of Blacksmithing
J. T. Parker, ... Assistant in Woodwork
J. D. Magee, A. M. (Chicago) ..... Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit) ..... Assistant in German
Miss Florence S. Latimer, B M. (Ferry Hall Seminary) ..... Assistant in Music
Miss Marjorie Russell (Mechanics' Institute) ..... Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.) ..... Assistant in Botany
Burton Rogers, D. V. M. (Iowa State College) ..... Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal) ..... Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.) ..... Assistant Chemist, Experiment Station
Herbert H. King, M. A. (Ewing College) ..... Assistant in Chemistry
Edw. C. Crowley, Ph. B. (Yale) ..... Assistant in Chemistry
Hugh Oliver ..... Assistant in Heat and Power Department
Miss Charlaine Furley, B. A. (Fairmount) ..... Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (U. of K.) ..... Assistant in Preparatory Department
Leland E. Call, B. S. (Ohio State University) ..... Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University) ..... Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.) ..... Assistant in English
William C. Lane, B. S. (K. S. A. C.) ..... Assistant in Physics
Louis H. Beall, A. B. (Denison) ..... Assistant in English
Miss Flora C. Knight, A. B. (Uni. of Wyoming) ..... Assistant in English
Miss Grace H. Woodward (Boston School of D. S.) ..... Assistant in Domestic Science
Miss Nellie Cave ..... Assistant in Music
Miss Anna I. McKirahan ..... Assistant in Music
Miss Margaret Mack (K. S. N.) ..... Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.) ..... Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.) ..... Assistant in Botany
Charles E. Bassler, D. V. M. (K. S. A. C.) ..... Assistant in Veterinary Science
Miss Mary W. Hancock (Mechanics' Inst.) ..... Assistant in Domestic Art
S. W. McGarrah, A. M. (Grove City College) ..... Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.) ..... Assistant in Animal Husbandry
Arthur L. Peck, B. S. (Mass. Ag. Coll.) ..... Assistant in Horticulture
Kirk H. Logan, B. S. (U. of K.) ..... Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College) ..... Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University) ..... Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College) ..... Assistant in Preparatory Department
Loren Clark ..... Assistant in Printing
Miss Bertha M. Johnston (Simmons College) ..... Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.) ..... Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University) ..... Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.) ..... Assistant in Agronomy
William Neill ..... Dairy Herdsman
G. A. Porteous ..... Herdsman
Wm. A. Lamb ..... Poultryman
Floyd Howard ..... Farm Foreman
William R. Lewis ..... Custodian

THE INDUSTRIALIST

Historical Society

Vol. 34 **No. 23**

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

The Industrialist.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

TERMS AND VACATIONS.

FALL TERM, 1907, THIRTEEN WEEKS.

Thursday, Friday, and Saturday, November 28, 29, and 30.....Thanksgiving vacation
Thursday and Friday, December 19, 20.....Examination at close of term

WINTER TERM, 1908, TWELVE WEEKS.

Monday, January 6.....Examination for admission, at nine A. M.
Tuesday, January 7.....Winter term begins
Tuesday, January 7.....Short courses in agriculture and dairying begin
Saturday, February 1.....Annual intersociety oratorical contest
Saturday, February 15.....Mid-term examination
Thursday, March 19.....Annual concert
Thursday and Friday, March 26, 27.....Examination at close of term

SPRING TERM, 1908, ELEVEN WEEKS.

Monday, March 30.....Examination for admission, at nine A. M.
Tuesday, March 31.....Spring term begins
Saturday, May 9.....Mid-term examination
Tuesday, May 19.....Beginning of summer course in domestic science
Tuesday and Wednesday, June 16, 17.....Examination at close of year
June 14 to 18.....Exercises of Commencement week
Thursday, June 18, at ten A. M.....Commencement
June 19 to September 16.....Summer vacation

FALL TERM, 1908,

Wednesday, September 16.....Examination for admission, at nine A. M.
Thursday, September 17.....College year begins

BOARD OF REGENTS.

HON. A. M. STORY, President.....Manhattan
HON. J. O. TULLOSS ['99], Vice-President.....Sedan
HON. J. S. MCDOWELL.....Smith Center
HON. GEO. P. GRIFFITH.....Hays
HON. EDWIN TAYLOR.....Edwardsville
HON. W. E. BLACKBURN.....Anthony
PRES. E. R. NICHOLS, Secretary *ex-officio*.....Manhattan

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
CHARLES WM. BURKETT, M. Sc. (Ohio State University).....Director Experiment Station
JOHN D. WALTERS, M. S. (K. S. A. C.).....Professor of Architecture and Drawing
JULIUS T. WILLARD, M. S. (K. S. A. C.).....Professor of Chemistry, Vice-Director Exp. Station
BENJ. L. REMICK, Ph. M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B. S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A. B. (U. of K.), M. S. (K. S. A. C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph. M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S. B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M. S. (K. S. A. C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph. D. (Univ. of City of New York).....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B. S. (K. S. A. C.).....Professor of Domestic Science
RALPH R. PRICE, A. M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A. M. (Central Wesleyan College).....Professor of Economics
JOHN V. CORTELYOU, A. M. (Uni. of Neb.), Ph. D. (Heidelberg).....Professor of German
OLOF VALLEY, B. M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D. V. S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B. S. A. (Iowa State College).....Professor of Animal Husbandry
WALTER E. KING, M. S. (Cornell).....Professor of Bacteriology
THOMAS J. HEADLEE, Ph. D. (Cornell).....Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U. S. A.....Professor of Military Science
JOHN C. KENDALL, B. S. (N. H. A. & M.).....Professor of Dairy Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art
MISS ANNE M. BOYD, A. B., Lib. Sci. (Millikin).....Librarian
ROBERT J. BARNETT, B. S. (K. S. A. C.).....Principal Preparatory Department

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., MAR. 14, 1908. No. 23

Oysters.

The following article is excerpted from Prof. J. T. Willard's recent "Report No. XII on Food Analyses" to the Kansas State Board of Health.

The investigation concerning the amount of water proper to be sold with oysters, which was begun last spring, was temporarily discontinued because of the closing of the oyster season. This fall the matter was again taken up. The writer took advantage of an eastern trip to secure a number of samples of oysters direct from the shells. These were obtained in a Washington market. The oysters were by the shucker placed directly in the jars in which they were shipped to the laboratory. The wish was to obtain them in the same condition as they would be delivered to a local purchaser. Some of the liquor in the shells with the oysters was put in the jar with them, but there is no means of knowing how exactly the division corresponded with ordinary practice. Six samples were obtained, and considerable differences were observed in the apparent amounts of liquid included. As the oysters were bought by count it was no object to the shucker to depart from his ordinary custom in respect to the amount of liquor included. At a later date other samples were secured for us in a similar manner by Mr. F. C. Weber, of the Bureau of Chemistry, to whom we are much indebted for his courteous assistance.

The samples were placed in pint-size self-sealing fruit-jars, a small amount of boric acid added as a preservative, and then securely closed and shipped by express to the laboratory at Manhattan. The analytical results obtained are shown in the accompanying table. Two bulk samples were sent by Mr. Weber as an indication of the quality of the oysters sold in that form in that market, and the results upon four additional bulk samples purchased in Manhattan are exhibited.

It will be remembered that samples of oysters examined by Prof. E. H. S. Bailey and by myself last spring were found to contain copper and that the possibility that the metal is a normal constituent of oysters was suggested by the writer. Tests of ten samples,

show the points from which the oysters were obtained. The two last samples mentioned are brands which are sold over what is known as 'Raw Bar' in our best city restaurants. Each of these samples I obtained in a different restaurant, in the shell, and had them shucked and the oysters thrown into the jars in my presence, likewise. These samples were brought to this laboratory and washed. That is, the original liquor of the oysters was drained off, and each sample, practically dry, was put in its jar, in which had been put about three-fourths of a gill of fresh water; to each sample was added the boric acid, as instructed, the jar sealed and carefully packed under my supervision, and the box carried immediately to the express company's office. My reason for washing the oysters, as described, will be explained later.

"In order to get the best results for you in this matter I thought best to make some investigation among oyster packers. I find, among other points given me, that it would be impossible to ascertain how many beds are represented in the Baltimore market, for the reason that oyster-beds are very numerous. I am told that from a single river oysters obtained from a bed on one side of the river may be quite different in point of size and quality from oysters obtained on the other side of the river. Moreover, oysters taken from a bed one year may be fat and large, and the next year oysters taken from the same bed will very likely run poor and small, so that there is no regular rule governing. The various samples which I sent you, marked various country points, represent fairly well the oysters which are received from those regions, and which are sold on this market. The two fancy brands may give you an idea of what the select oysters are. I am told that these brands mean little except a careful selection. That is, take the 'Lynnhaven' brand for example, which is a large oyster; the same is obtained by selecting from common stock, oysters which run large in size and have a good taste, so that the name of the brand means little and demands a higher price only on account of careful selection.

"The method used in packing-houses I find to be somewhat as follows: When the oyster is first shucked, without any of its own liquor it is thrown into a receptacle containing fresh water. In a short time this water is drained off and the oysters are thrown into a large tub containing fresh water, where they are allowed to remain for an hour or two. The water is then drained off by throwing the contents of the tub into a large trough with holes in the bottom, and the oysters, practically dry, are then measured up for sale. In shipping to distant points pails are used containing from

five to ten gallons, and if a merchant would ship five gallons of oysters he would use a pail containing about eight gallons. Into the empty pail he first throws about a quart of water and then pours in the five gallons of oysters, after which a lump of ice (which, melted, would make about two gallons of water) is placed in the pail, and the top nailed on. In this way your Western shipper would receive a pail (the ice having melted) containing about seven and one-half gallons of oysters and water, but he would be paying for only five gallons of oysters, because, as I mentioned before, they were originally measured practically dry by the Eastern shipper. I am told, too, that the oysters are sold on this market in about the same manner; that is, the wholesale dealer measures without including the water. In some of the retail shops the custom is to use a dipper with holes in it, so that in measuring up for the customer the water drains off and the customer gets almost dry measure. This, however, is not governed by any law, and it is left with the dealer how he shall measure out his oysters, many profiting by including a supply of water. The reason given for keeping oysters in fresh water is that in their own liquor they would soon spoil, while without any water they become sticky and slimy, and would be repulsive to the purchaser.

"The samples which I sent you have, therefore, been treated in just about the same manner as the dealer here would handle a large quantity, but, in the light of the explanation made to you, these samples will not be worth so much to you as you anticipate. From my understanding of the conditions governing sale of oysters, your Western dealer should measure his oysters as nearly dry as practicable, for the reason that he buys them measured in that manner. One of the dealers told me that last spring he visited a customer living in Iowa, and went out with him on one of his route wagons. He found that his customer was measuring out the oysters with as much water as was received in the pail. In other words he was paying for five gallons and selling about seven and one-half gallons."

In the analysis of the oysters the solids in the meats and in the liquor were separately determined, and from the percentages in each and the amounts of meats and liquor the solids in the whole sample were calculated.

In the determination of copper the meats and liquor were separately treated in a number of cases, but in most of the later analyses a sample was taken designed to represent the whole. The analysis was made by digesting fifty grams of the sample with concentrated sulphuric acid as for the determination of nitrogen by

the Kjeldahl method, care being taken not to use a large excess of acid beyond that necessary for oxidation of the organic matter. The copper was precipitated electrolytically in the clear and diluted solution. No trouble was experienced by this method except some foaming at the beginning of the digestion, but this was readily controlled by adding a little paraffin.

Study of the table shows wide diversity in the solids present in the samples. Reference to the quotations from letters shows that there is probably much lack of uniformity of treatment of the oysters before they reach the seaboard markets. Some are "floated" and others are not, hence samples from the shell may not represent what the oysters should be. The Baltimore samples, it must be remembered, had a little water added to them in order to simulate trade practice. It would also seem almost certain that the "Chester River" and the "Swamp Point," and perhaps others, had been "floated."

From the information at hand it would seem that fresh oysters as placed on the market should have very little liquid with them, and the percentage of the solids in the meats should be the best test of adulteration. It is well known that oysters will absorb by osmotic action a portion of any water in which they may be placed. At the same time oyster solids pass out to a certain extent into the surrounding water. There is no doubt that in this way not only are the juices of the oyster diluted by the water absorbed, but the flavor is still further impaired by the loss of solids. There is a marked difference in flavor between oysters in a natural state and those in the water-soaked, adulterated condition which has been the rule up to recent time.

As to the proper amount of water for oysters, it is probable that no fixed rule applies, the natural product probably varying considerably even before it has been subjected to the manipulations of man. Of the twenty-two samples taken directly from the shells and to which no water was added, save a part of such as accompanied the oysters in the shells, it will be seen that in the meats the solids found varied from 13.12 per cent in the Hampton Bars to 19.08 per cent in one of the Lynnhaven samples. The average of the twenty-two samples is 16.3 per cent. If we consider the solids in the entire samples, that is, meats and liquor together, using the same examples we find the minimum amount in the Curryomans with 9.38 per cent, and the maximum in the Rockaways with 17.79 per cent. In the Curryomans, however, it will be observed that there was an unusually large amount of accompanying liquor, while in the Rockaways there was very

little. The average amount of solids in the liquor of the twenty-two samples was 6.97 per cent.

Taking everything into consideration the standard of ten per cent of solids established by the State Board of Health seems abundantly low. Further, it should be recognized that the addition of water to oysters, with percentages of solids large enough to stand dilution, must be treated as an adulteration. The standard is not to be looked upon as one of excellence, but the minimum that will be tolerated. The average should be much higher; that shown by the samples under consideration is 13.58 per cent.

It is perhaps also worth while to further emphasize the fact that merely keeping the oysters in water adulterates them by extracting their solids and filling the meats with water, even if the dealer strains them out from the remaining water when he measures them to the consumer, and such treatment of oysters is contrary to both federal and Kansas laws.

Recurring now to the question of copper in oysters, it will be seen from the table that all the samples contained copper in quantity sufficient for its determination, and that the amounts varied greatly. None of these show as high a percentage as that found in one reported upon last June, viz., 0.21 per cent of the dry substance of the meat. In the thirty-four samples included in the present report the minimum amount of copper found, calculated on the dry solids, was 0.005 per cent, the maximum was 0.17 per cent, and the average 0.05 per cent. It is also interesting to note that both the maximum and the minimum were found in "Lynnhaven" oysters, but it must also not be forgotten that owing to the uncertainty of dealers we may not be sure that oysters called "Lynnhaven" really are from that locality.

It may be recalled that in a previous report it was recorded that copper had been found in each of ten other samples, including a number from Southern localities. These samples, being canned, were perhaps open to the suspicion that the copper had been introduced in some way in the process. From the data now at hand, however, it seems safe to conclude that copper is a normal constituent of the oyster. It seems not unlikely that samples carrying the larger quantities may be deleterious, at least to individuals especially susceptible to the toxic effect of the metal. As previously noted, the oysters rich in copper have a coppery taste and a greenish-blue color. A green color in oysters has been observed to be caused by algæ upon which the oysters had fed.

Writers state that the oysters of the European Atlantic, which are a different species from that of this side of the ocean, have a marked coppery taste, and are thus less agreeable as food. It would be interesting to ascertain if that species is richer in copper than our own, or whether the taste is due to some other cause.

Attention may be called to the fact that the liquor accompanying the oysters has, whenever examined, been found to contain copper in quantities of the same order of magnitude as those found in the meats.

We have done no work upon the nature of the copper compound. The name hemocyanin has been given to a respiratory pigment containing copper and occurring in many mollusks and crustaceans, and probably the copper of oysters is in the same or a similar compound.

Acknowledgment should be made to Mr. C. A. A. Utt for the work upon the recent samples of oysters, and he has also made most of the other analyses reported at this time. I am indebted to Mr. J. W. Calvin for the earlier determinations of copper.

Doctor Kellerman Dead.

From Columbus, Ohio, comes the sad news of the death of Prof. William A. Kellerman. Accompanied by a number of special students of botany, the professor left his class rooms and laboratories at the Ohio State University on December 8 for a study trip to Guatemala, Central America, where he had gone on similar expeditions previously for several winters. He was in blooming health when he left, and as he had stood the climate of those regions without serious trouble he had no apprehensions on this account. It seems, however, that this time he was unwell as soon as he had established his camp. The daily papers state that he died of a malarial fever.

Prof. William A. Kellerman occupied the chair of botany at this College from 1883 to 1891 and left here to accept the chair of botany of the Ohio State University. He was then a young man of about 33 years of age. He was a graduate of several American universities and had studied botany for two years in the University of Zurich, Switzerland, receiving from this world-renowned institution the title of Doctor of Philosophy. While at Manhattan he published several books on his science, as "Elements of Botany;" also a "Plant Analysis, or Key, to the Dichotomal Plan for Identifying Plants East of the Mississippi;" also "Analytical

Flora of Kansas;" also a "School Botany." He also prepared numerous papers in the various State reports, the two of special importance to Kansas being "The Kansas Forest Trees Identified by Leaves and Fruit," the first work of the kind published in the United States, and "Native Grasses of Kansas." Professor Kellerman was also the second editor and publisher of the *Journal of Mycology*, a monthly which ultimately became the organ of the Division of Bacteriology of the United States Department of Agriculture, and is now being issued as a government publication.

Doctor Kellerman was not only a scientist along botanical lines and the recognized authority on the botany of Central America; he was also a model teacher, a model man, and a model father and husband. The writer of these lines who knew him intimately can think of no man who in his eyes was a more ideal and more perfect specimen of manhood physically, mentally, and morally. We are aware that this is saying much, but we knew him to the core.

Doctor Kellerman leaves a widow and three children to mourn his untimely death. His son, Karl, is bacteriological expert in the United States Department of Agriculture.

J. D. WALTERS.

Choral Union Program.

The following is the program to be rendered at the fourth annual concert of the Choral Union, in the College Auditorium next Thursday evening:

PART I.

1. Overture..... *V. Herbert*
COLLEGE ORCHESTRA

2. Festival Te Deum, E, flat..... *Dudley Buck*
CHAPEL CHORUS

3. She Alone Charmeth My Sadness..... *Gounod*
("Queen of Sheba")
OLOF VALLEY

4. Prayer and Finale..... *Wagner*
("Lohengren")
OLOF VALLEY
MISSES SMITH, BIDDISON; MESSRS. BEIGHLEY, NELSON, PORTER; AND CHORUS

5. Opera Mirror..... *Tobane*
COLLEGE ORCHESTRA

PART II.

"The Swan and the Skylark"..... *Thomas*
MISSES BIDDISON, SWEET, KENDRICH; MESSRS. PORTER, MARTIN; AND CHORUS

Juniors Win in the Interclass Corn-Judging Contest.

The interclass corn-judging contest of the College was held in Agricultural Hall on Monday, March 9. Four classes of five members each participated in this contest, competing for the Fielding Loving Cup. Several individuals also entered the contest, making twenty-seven in all, competing for the gold, silver and bronze medals offered by the Students' Agricultural Association to the three parties ranking highest in the contest. Much interest has been taken in these annual contests, and this work is, without doubt, a great benefit to the students in the agriculture course, causing them to become more interested in their work and broadening their ideas of agricultural education.

A rating of sixty points was given for placing and forty points for stating reasons for such placing, with the following results:

CLASS CONTEST.

	Points.
Juniors	311.6
Seniors	310.1
Sophomores	288.5
Short Course, second year	276.1

INDIVIDUAL CONTEST.

R. W. Hull, senior	68.5
E. Kiser, junior	66.4
Guy D. Noel, junior	66.2
O. M. Kiser, senior	66.1
McConachie, short course	65.2
W. L. Shelley, junior	65.0
L. J. Ostlund, sophomore	65.0
H. A. McLenon, senior	63.3
G. E. Thompson, junior	63.0
C. H. Alspaugh, individual	61.5
Oscar Baker, short course	61.4
W. Turner, sophomore	60.8
G. H. Brown, individual	60.5

JUDGES.

A. M. TenEyck.....Professor of agronomy.
E. G. Schafer.....Instructor in crops.
C. S. Knight.....Class instructor.

"The Swan and the Skylark."

The coming Choral Union concert, of which we publish a program on another page, is to be a social event. Already there are several line parties being organized. The senior, junior and sophomore classes are planning to attend in groups, and several town clubs will probably do the same thing. Orders for reserved seats are coming in from many places in Kansas, and the indications are that every one of the 2500 seats of the Auditorium will be filled.

Local Notes.

Lovers' Lane is getting a new cinder walk.

The Board of Regents will meet Monday, March 16, and remain in session during the week.

The Horticultural Department has received a fine lot of ferns for the greenhouse.

The Agronomy Department has lately sent a shipment of fifteen varieties of grain to a Russian experiment station.

Mrs. McFarland, wife of Prof. B. S. McFarland whose sudden death in September the College still mourns, was a visitor here last week.

The farmers' short course closed last Friday. About 200 young farmers attended the winter session of the two-term course in agriculture.

The Horticultural Department has begun work with the sprayer for the benefit of the short-course boys, and incidentally for the welfare of the orchard.

The flag mast that carries "old glory" on top of Anderson Hall has been given an additional duty. It now displays under the stars and stripes the little squares and isosceles triangles of the United States Weather Bureau.

The Horticultural Department has received a box of seed of the Japanese Laxis Leptolepsis tree. As the department is carrying on an extensive experiment with conifers, these trees will be a valuable addition to the arboretum.

The Department of Physical Training will give a basket-ball tournament in the Girls' Gymnasium on March 16, at 3 P. M. As the hall is not large enough to admit many visitors, the department has issued tickets to the invited parties.

The "First Library Club of Kansas" held its first meeting in Manhattan, March 6. There were delegates present from Junction City, Abilene, Clay Center, Salina, and from the city and the College. Miss Glenn, of Junction City, was elected president, and Miss Lee, of Manhattan, secretary.

The Manhattan Commercial Club is circulating a petition to the city council asking for the paving of a street from the court-house to the main entrance of the College campus. The petition is being signed by a large number of property owners along the proposed routes, and it looks as if the College might get the long coveted improvement this time.

Professor TenEyck recently received a very fine pocket toilet set with compliments from the *Missouri and Kansas Farmer* in return for several articles which he has written for that paper. He also received, some time ago, a set of four volumes of Bailey's Cyclopedia of American Agriculture from the *Kansas Farmer* for similar services rendered.—*Students' Herald.*

Winter term will close Friday, March 27, and spring term will open Tuesday, March 31. Examinations for admission will be given at 9 o'clock A. M. on March 30.

C. G. Anderson has on exhibition in the show window of his bookstore a beautiful trophy to be given to the member of the College ball team who will have the highest batting average at the close of the season.

Over 400 students went to Fort Riley on a special train last Monday to accompany the short-course farmers who went there to judge cavalry and artillery horses. Professor Kinzer, Assistants Wheeler and Elling, and Doctor Brady went with the class. The excursion left at 8 o'clock in the morning and returned at 6 in the evening. The students were well received at the Fort and had a good time.

Alumni and Former Students.

R. D. Scott, '04, is teaching elementary science in the Lincoln, Nebr., High School and is meeting with excellent success in a difficult field.

W. G. Shelley, '07, is now located at Akron, Colo., and assisting J. E. Payne, '87, in the United States Experiment Station in his charge at that point, and is proving very efficient.

Ethel Berry, '07, has been engaged to give a course of daily demonstrations in domestic science at the Cawker Chautauqua next July. This shows satisfaction with the work done by her there last year.

Lieutenant-Colonel Albert Todd, '72, writes in the February-March *Alumnus* very entertainingly and all too briefly concerning his recollections of "the Ancients." Colonel Todd's recollections go back about as far as those of the earliest inhabitant.

The latest number of the *Alumnus* contains a long article by Darwin S. Leach, '81, giving a very entertaining account of some of his Central American experiences. These throw very instructive side lights on the prospects of Central American political development.

Stephen I. Wilkin, former junior student, and Bonnie F. Adams, '99, were married at the home of the bride, Marvin, Kan., March 10, 1908. They will be at home on the farm near Hoxie, Kan., after April 1. Many old friends will unite in wishing long life and happiness to this worthy couple.

Dr. A. T. Kinsley, '99, sends a separate reprint of his article on "Tumors" which recently appeared in the proceedings of the American Veterinary Association. The article bears unmistakable impress of Doctor Kinsley's thorough grasp of his subject, and its value is greatly enhanced by the plates, which were made from drawings marked "Bourne;" presumably this is his associate, R. F. Bourne, '03.

The Kansas City Alumni Association held a very successful reunion Friday evening, March 6. Several members of the Faculty were invited, but none was able to attend. The Alumni Association of Topeka held a reunion Friday evening, March 6, which was well attended. One of the special features of the evening was the address by Prof. J. D. Walters.

Changes of address: J. E. Payne, '87, and Mary (Cottrell) Payne, '91, Akron, Colo.; J. A. Butterfield, '99, and Ary (Johnson) Butterfield, '98, 3821 Morrill Ave., Kansas City, Mo.; Ralph B. Felton, '04, and Hattie (Forsyth) Felton, '04, Dwight, Kan.; Ned M. Green, '97, Fort Douglas, Utah; E. W. Matherly, '06, Madison, Kan.; A. E. Oman, '00, Garden City, Kan.; J. E. Thackrey, '93, and Elva (Palmer) Thackrey, '96, R. R. No. 6, Independence, Mo.; John R. Harrison, '88, Post Office Inspector's Office, Washington, D. C.; R. A. Cassell, '07, Manhattan, Kan.; Mark Wheeler, '97, Fort Root, Little Rock, Ark.

The following items are taken from the *Alumnus:*

H. R. Heim, '06, who is with the Westinghouse Company, at Pittsburg, Pa., was recently taken off of dynamo test and transferred to the engineering offices of the company. This was done at the request of Mr. Hallock, one of the department engineers, and it speaks very highly of Mr. Heim's ability and work.

E. R. Kupper, '07, is engaged in engineering work at Chihuahua, Mexico. He has been working on some new machinery and has not only secured some valuable experience but has also been drawing good pay. "Jigger," as he was known, is not very favorably impressed with the Mexicans, but he says that Mexico is a good place for a young engineer.

Loyd Pancake, '00, was married, December 8, 1907, to Miss Viola Grant, of Rawlins county, Kansas. The ceremony took place at the home of the bride's father, and was witnessed by only a few guests. Mr. and Mrs. Pancake visited with relatives in Kansas City and St. Louis, on their way to Mount Airy, Ga., where Mr. Pancake is engaged in farming.

L. M. Jorgenson, '07, who has been employed as a special apprentice by the Westinghouse Electrical and Manufacturing Company, at Pittsburg, Pa., left there recently and is now located at Goshen, Ind. He has a good position there as instructor in mathematics in the high school. He likes the work very much, and finds the clear air of Indiana much more pleasant than the smoke of Pittsburg.

A. B. Carnahan, '05, was married in Lynn, Mass., to Miss Rachel G. Jeffers, Saturday, January 11. The wedding was a quiet one and a surprise to the many friends in Lynn. The bride is well known in Lynn in Christian Endeavor work. The groom, a former editor of the *Alumnus*, then known as the "Jayhawker," is employed by the General Electric Company on the steam turbine work. They are at home to their friends at 16 Mountain Avenue, Swampscott, Mass.

Board of Instruction (concluded).

JACOB LUND, M. S. (K. S. A. C.).....Superintendent Heat and Power Departmen
JOHN H. MILLER, A. M.....Superintendent Farmers' Institutes
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.).....Secretary
CLARENCE L. BARNES, D. V. M. (Cornell).....Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B. S. (Chicago).....Assistant Professor of Physics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.).....Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.).....Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard).....Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.).....Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.).....Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K. S. A. C.).....Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago).....Assistant Professor of Mathematics

---

Miss Ada Rice, B. S. (K. S. A. C.).....Instructor in English
Miss Ella Weeks, A. B. (U. of K.).....Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount).....Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University).....Instructor in Veterinary Science
Robert E. Eastman, M. S. (Cornell University).....Instructor in Horticulture
Miss Ula M. Dow, B. S. (K. S. A. C.).....Instructor in Domestic Science
William L. House.....Foreman of Carpenter Shop
Miss Gertrude Barnes.....Assistant Librarian
Louis Wabnitz.....Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.).....Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.).....Foreman of Foundry
Miss Emma J. Short.....Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.).....Assistant in Domestic Art
Theo. H. Scheffer, A. M. (Cornell University).....Assistant in Zoölogy
Miss Kate Tinkey.....Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C.).....Assistant in Printing
Roy A. Seaton, B. S. (K. S. A. C.).....Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College).....Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.).....Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale).....Assistant in Architecture and Drawing
Chas. Yost.....Assistant in Heat and Power Department
Earle B. Milliard.....Foreman of Blacksmithing
J. T. Parker.....Assistant in Woodwork
J. D. Magee, A. M. (Chicago).....Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit).....Assistant in German
Miss Florence S. Latimer, B. M. (Ferry Hall Seminary).....Assistant in Music
Miss Marjorie Russell (Mechanics' Institute).....Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.).....Assistant in Botany
Burton Rogers, D. V. M. (Iowa State College).....Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal).....Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.).....Assistant Chemist, Experiment Station
Herbert H. King, M. A. (Ewing College).....Assistant in Chemistry
Edw. C. Crowley, Ph. B. (Yale).....Assistant in Chemistry
Hugh Oliver.....Assistant in Heat and Power Department
Miss Charlaine Furley, B. A. (Fairmount).....Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (U. of K.).....Assistant in Preparatory Department
Leland E. Call, B. S. (Ohio State University).....Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University).....Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.).....Assistant in English
William C. Lane, B. S. (K. S. A. C.).....Assistant in Physics
Louis H. Beall, A. B. (Denison).....Assistant in English
Miss Flora C. Knight, A. B. (Uni. of Wyoming).....Assistant in English
Miss Grace H. Woodward (Boston School of D. S.).....Assistant in Domestic Science
Miss Nellie Cave.....Assistant in Music
Miss Anna I. McKirahan.....Assistant in Music
Miss Margaret Mack (K. S. N.).....Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.).....Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.).....Assistant in Botany
Charles E. Bassler, D. V. M. (K. S. A. C.).....Assistant in Veterinary Science
Miss Mary W. Hancock (Mechanics' Inst.).....Assistant in Domestic Art
S. W. McGarrah, A. M. (Grove City College).....Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.).....Assistant in Animal Husbandry
Arthur L. Peck, B. S. (Mass. Ag. Coll.).....Assistant in Horticulture
Kirk H. Logan, B. S. (U. of K.).....Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College).....Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University).....Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College).....Assistant in Preparatory Department
Loren Clark.....Assistant in Printing
Miss Bertha M. Johnston (Simmons College).....Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.).....Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University).....Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.).....Assistant in Agronomy
William Neill.....Dairy Herdsman
G. A. Porteous.....Herdsman
Wm. A. Lamb.....Poultryman
Floyd Howard.....Farm Foreman
William R. Lewis.....Custodian

THE INDUSTRIALIST

Historical Society

Vol. 34 **No. 24**

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

The Industrialist.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

TERMS AND VACATIONS.

FALL TERM, 1907, THIRTEEN WEEKS.

Thursday, Friday, and Saturday, November 28, 29, and 30.....Thanksgiving vacation
Thursday and Friday, December 19, 20.....Examination at close of term

WINTER TERM, 1908, TWELVE WEEKS.

Monday, January 6.....Examination for admission, at nine A. M.
Tuesday, January 7.....Winter term begins
Tuesday, January 7.....Short courses in agriculture and dairying begin
Saturday, February 1.....Annual intersociety oratorical contest
Saturday, February 15.....Mid-term examination
Thursday, March 19.....Annual concert
Thursday and Friday, March 26, 27.....Examination at close of term

SPRING TERM, 1908, ELEVEN WEEKS.

Monday, March 30.....Examination for admission, at nine A. M.
Tuesday, March 31.....Spring term begins
Saturday, May 9.....Mid-term examination
Tuesday, May 19.....Beginning of summer course in domestic science
Tuesday and Wednesday, June 16, 17.....Examination at close of year
June 14 to 18.....Exercises of Commencement week
Thursday, June 18, at ten A. M.....Commencement
June 19 to September 16.....Summer vacation

FALL TERM, 1908,

Wednesday, September 16.....Examination for admission, at nine A. M.
Thursday, September 17.....College year begins

BOARD OF REGENTS.

HON. A. M. STORY, President.....Manhattan
HON. J. O. TULLOSS ['99], Vice-President.....Sedan
HON. J. S. MCDOWELL.....Smith Center
HON. GEO. P. GRIFFITH.....Hays
HON. EDWIN TAYLOR.....Edwardsville
HON. W. E. BLACKBURN.....Anthony
PRES. E. R. NICHOLS, Secretary *ex-officio*.....Manhattan

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
CHARLES WM. BURKETT, M. Sc (Ohio State University).....Director Experiment Station
JOHN D. WALTERS, M. S. (K. S. A. C.).....Professor of Architecture and Drawing
JULIUS T. WILLARD, M. S. (K. S. A. C.).....Professor of Chemistry, Vice-Director Exp. Station
BENJ. L. REMICK, Ph. M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B. S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A. B. (U. of K.), M. S. (K. S. A. C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph. M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S. B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M. S. (K. S. A. C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph. D. (Univ. of City of New York).....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B. S. (K. S. A. C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College).....Professor of Economics
JOHN V. CORTELYOU, A.M. (Uni. of Neb.), Ph. D. (Heidelberg).....Professor of German
OLOF VALLEY, B. M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D. V. S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B. S. A. (Iowa State College).....Professor of Animal Husbandry
WALTER E. KING, M. S. (Cornell).....Professor of Bacteriology
THOMAS J. HEADLEE, Ph. D. (Cornell).....Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U. S. A.....Professor of Military Science
JOHN C. KENDALL, B. S. (N. H. A. & M.).....Professor of Dairy Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art
MISS ANNE M. BOYD, A. B., Lib. Sci. (Millikin).....Librarian
ROBERT J. BARNETT, B. S. (K. S. A. C.).....Principal Preparatory Department

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., MAR. 21, 1908. No. 24

Bird Life.

[The following paragraphs are excerpted from pamphlet No. 5, of the Agricultural Educational Series published by the Institute Department of this College. The pamphlet was prepared by Theo. H. Scheffer, instructor in zoölogy, and, like the other pamphlets of the series, is being distributed free to all teachers of rural schools and all teachers of grammar grades of town and city schools on request of the superintendent of schools. Communications pertaining to the series should be addressed to J. H. Miller, Superintendent College Extension, Manhattan, Kan.]

There are few groups of objects in nature, whether they belong to the plant or animal kingdom, that will rank with the feathered tribe in the degree of human interest they attract. To properly direct the activities of the young people who are trying to find expression for this interest is the purpose of this brief outline in bird study.

Birds must have food—plenty of it, and often. Any one who will spend an entire day in watching them will almost conclude that they do little else from daylight till dark but flit and hop about in search of something to eat. In reality some of them will devour, not hundreds, but thousands of weed seeds and insects in a single day, as has been proved by scientists in the Department of Agriculture who have examined the contents of their stomachs. This explains why even a few birds on the farm may be of immense benefit to the man who grows the crops. If properly encouraged and protected the larger number of birds thus attracted would be one of the most valuable assets on the credit side of the farmer's account-book. This has been shown to be true time after time by the temporary disappearance or sudden reduction in numbers of certain birds in a given locality, followed always by an alarming increase in the hordes of destructive insects or an unusual crop of weeds. We must not forget that every insect or seed eaten in winter and spring might have multiplied to thousands the next summer. In other paragraphs we will discuss the food habits of some of the prominent groups of birds.

With the failure of their food supply in the autumn and the approach of cooler weather many of our birds become restless and instinctively begin to move southward. These movements

cannot fail to arouse the interest of the youthful student of things out of doors. In the spring the arrival from somewhere of each old friend is hailed with delight, and one can almost remember the exact date when the first robin or the first oriole put in his appearance; but with the falling of the leaves they steal off so silently to the southland that before we realize it they are gone. Some go singly, some in pairs, and some in flocks. Most of their movements in migration take place at night, so that we very seldom see the southward drift of the successive bird waves. The flights are not long, an average rate of progress being about twenty-five miles a day or less. Some halt for a short time, others from the rear overtake and pass them, and thus, leap-frog fashion, they finally reach their winter homes in the Gulf states, Mexico, Central America, or the Bermudas and West Indies. A few species of birds from farther north, as certain shrikes, juncos, waxwings and native sparrows, find our middle latitudes suitable for a winter resort, and so remain here until spring calls them north again. These we call *winter sojourners.* Those species whose southward journeys we have just described are classed as *summer residents.* Still others—the *residents*—remain with us the year round. Many species of the water-fowl are rarely found in middle latitudes except when passing through the country in their spring or autumnal flights. These birds are called *migrants.* Unlike the song-birds, their migrations occur mainly in the daytime, but sometimes we may hear their bewildered calls at night as they scud before an approaching storm. In seasons when there is an unusual abundance of wild fruit and winter berries, stragglers and deserters from the migrating hosts of song-birds that pass south in the fall may be found in our groves and thickets in the coldest weather.

WINTER BIRDS.

The birds that stay with us during the winter are of more value to the farmer than any equal number that come here for the summer only. It is in the winter that the most good can be accomplished in the destruction of insects, for at that time the few *adult* insects that *hibernate*, as well as *pupæ* and *larvæ*, are diligently sought for by the hungry birds. The death of one injurious insect in winter may mean hundreds, or even thousands, fewer of that species in that locality the next summer. We may easily form the acquaintance of most of the birds that winter in Kansas and the Middle West in general, for there are not more than about fifty such species. We give here a few of the more common ones:

1. Bluebird.
2. Robin. (A few stragglers.)
3. Meadow-lark.
4. Redbird.
5. Chewink.
6. Carolina Wren.
7. American Goldfinch.
8. Cedar Waxwing.
9. Northern Shrike.
10. Blue Jay. (A few stragglers.)
11. Quail.
12. Woodpecker. (Four species.)
13. Crow.
14. Rusty Blackbird.
15. Horned Lark.
16. Longspurs. (Four species.)
17. Sparrows. (Five species.)
18. Juncos.
19. Titmouse.
20. Chickadee.
21. Nuthatch.
22. Brown Creeper.
23. Owls. (Six species.)
24. Hawks. (Eight species.)

SOME OF OUR USEFUL BIRDS.

Protectors of the Orchard.—The Chickadee, Nuthatch, Titmouse and Creeper form a group of cheerful little birds that creep about on the bark of trees or cling to the slender branches, searching in tiny holes and crevices for small insects or insect eggs. Associated with the smaller Woodpeckers, they do valiant service in the orchard, and their presence should be encouraged in every way. Numbers of them may be attracted to the shade- and fruit-trees about the house by occasionally tying to the limbs bits of suet, scraps of meat or marrow-bones sawn in two lengthwise.

Seed-eaters.—Few groups of birds are of more real benefit to the agriculturist than the native Sparrows. We have four or five common species with us in the winter and about double that number in the summer. In the former season they are assisted in their work of cleaning up the weed seeds in the farmer's field by several species of Longspurs which come down here from farther north. The Longspurs are frequently called Snowbirds. The appetites of the seed-eaters are particularly good in cold weather, and the number of seeds eaten in a single day is often enormous—sometimes over a thousand, as reported by the Department of Agriculture.

The Hawks and Owls.—There seems to be a general prejudice against these birds of prey, but in most cases there are no grounds for it. The large majority of Hawks and Owls are decidedly beneficial to the farmer. It is unfair to condemn a whole race for the sins of one or more individuals, and yet this is just what we sometimes do. Two, or at the most three, species of Hawk in this country are destructive to poultry interests, while a dozen other species feed upon field-mice, gophers, young rabbits, and the like. The majority of the large Hawks seldom molest even wild birds. Our three species of so-called "Chicken Hawks" are rather small or medium in size and, fortunately, not

very abundant. The time to shoot any particular Hawk is when it has shown a disposition to eat poultry. The farmer who makes war on the whole race because one individual has injured him is adopting the tactics of the old time Indian. But one species of Owl, the large "Hooter," is likely to make any trouble for the farmer; that is, the kind of farmer who does not shut his poultry up at night. Owls include in their bill of fare a great many of the destructive pocket-gophers that come out in the twilight to dump the earth which they have excavated in their burrows.

The Quail.—The farmer should regard the quail as one of his most valuable assets. "He is the gleaner who never reaps, who guards the growing crops, who glories over a bounteous yield, yet is content to watch and wait for those lost grains which fall to him by right." These birds are good stubble feeders, gathering in weed seed, waste grain, and insects. They also eat a few wild berries, rose hips, and the like. Included in their diet of animal food are large numbers of ill-tasting insects that are usually rejected by other birds. Among these insects are the potato beetle, the cucumber beetle and the chinch-bug. In the stomach of a single Quail has been found 10,000 pigweed seeds; in another 1000 ragweed seeds; in another 5000 pigeon-grass seeds; in another 100 potato beetles, and so on. Because of their food habits, and also because of their cheerful disposition and their beauty, Quails should be protected and encouraged everywhere. They should be fed in rough wintry weather, especially if there is snow on the ground. Neglect of this may result in all the Quails in a locality perishing in a particularly bad storm. Patches or strips of cane, Kafir-corn, popcorn and the like should be left standing in the fields for them. Some farmers sow strips of sorghum at edge of "draws" or just outside the stock-yards for food and protection of Quails.

The Meadow-lark.—Like the Quail the Meadow-lark is also a ground feeder. About three-fourths of its food for the year consists of insects. The other one-fourth is about equally divided between weed seeds and waste grain gathered from the stubble fields in the winter months. Larks never feed on fruit. In the early spring their contributions in song are the first bird notes that warm the heart of the pioneer dweller on the prairies. Of considerable interest to the bird lover is the perfect harmony between the color patterns of the sides and back of this bird and the gray-brown of the dry prairies in winter. When Larks are crouching in the grass it is a difficult matter indeed for any of their enemies to see them. Instances of *protective coloring* are

common among other birds and, in fact, among all animals that depend for their safety on concealment.

The Robin.—The Robin may be given as an illustration of a type of bird that sometimes gets into trouble by feeding on cultivated fruits. Associated with him in this respect are the Catbird, the Brown Thrasher, the Mocking-bird, and the Oriole. In resenting the collection of the small toll which these birds take from the orchard and berry patch the farmer overlooks the fact that if birds have rights at all they are entitled to a small quantity of fruit for protecting the trees from insects the entire year. We pay out money for life insurance, for hail insurance on standing grain, for fire insurance on our buildings. Why molest a bird for collecting his premium on crop insurance? It is certainly the cheapest insurance the farmer can get. An old maxim has it that we are more prone to see the faults than the good qualities in our associates. This is none the less true in our dealings with birds. We catch them eating a few cherries or strawberries and condemn them without thought of the thousand and one good turns they have been doing us. This is not fair. Cultivated fruits do not form more than seven or eight per cent of the food of any one of these birds for the year. The bulk of their food is insects and wild berries. The Oriole in particular is one of the few birds that will eat caterpillars in large numbers. In this respect it is a close rival of the Cuckoo. Even if the quartet of birds we have been discussing were not beneficial from the standpoint of their food habits, who could be hard-hearted enough to kill one of the sweet songsters because it stopped in its caroling to eat a little of the fruit with which we tempted its appetite?

Birds that Feed in the Air.—In the Swallows, the Martins, the Flycatchers. the Night-hawks and a few others we have a group of birds against which no complaint can be justly made. They do not sing for us, but we love to watch the graceful skimming movements of the Swallows particularly and listen to their enticing chatter. These birds feed almost exclusively on winged insects which they capture in the air. The Night-hawk while engaged in this business amuses himself by an occasional downward swoop from a considerable height, producing a booming sound by catching the air under his wings as he turns. The King-bird, in addition to the service he renders us by eating insects, valiantly attacks and drives away the Hawk or Crow that comes too near the poultry-yard.

The Smaller Summer Birds.—These will include the Warblers and Vireos, birds of small size, pretty colors usually, and sweet,

wildwood notes. They live among the trees and feed on the insects that infest the foliage.

The Blackbirds.—We have two or three common species of these sable-feathered summer residents. The Yellow-headed fellow is less often seen than his Red-winged relative, but in numbers and resulting influence on crops the Bronze Grackle outranks them all. These are the birds that follow the plow in the spring, barely hopping out of the way of the farmer's team in their eagerness to pick up the grubs and other insect larvæ and pupæ in the warm, mellow, upturned earth. All summer long they may be seen feeding in fields or gardens, particularly where the soil is being stirred by cultivation. They also frequent meadows and pastures, probing around in the sod for worms and insect larvæ. To their discredit it must be said, however, that they also pull up some sprouting corn. Later in the fall, when they are preparing to migrate, they flock together in immense numbers and sometimes do serious damage by swooping down in clouds on grain in the field or shock. We feel, though, that they have more than offset this damage with their good works in spring and summer.

BIRDS OF DOUBTFUL VALUE.

The English Sparrow.—There are a few renegades in the bird camp, concerning which the less said the better. Luckily, however, there are but two or three species that deserve to be placed in this class. Chief among these is the English Sparrow, a quarrelsome, thieving, dirty little rascal, introduced from Europe about fifty years ago. The species has since spread over the entire country, and has in many localities driven away from our villages and farm dwellings the native song-birds that once sang and nested there. We cannot quite forget this, for we prefer the companionship of Wrens, Robins, Bluebirds and Martins to these obtrusive, noisy little foreigners. But this is not all. Not only do they drive away better birds from our premises, but they tear down their nests and smash their eggs, litter the upper structures of buildings with combustible material, choke up the rain-water spouts, and swoop down in devastating flocks on gardens and grain fields. The best that can be said of them is that they bring a little cheer to the larger cities by hopping and flitting about the streets summer and winter. By a vigorous persecution and use of the gun if necessary we may prevent them from nesting or remaining about our country and village homes. We really owe it to our shyer native songsters to drive the intruders away.

The Crow and the Blue Jay.—These two birds may be considered together, for they are nearly related and their habits are some-

what similar. The Jays feed principally upon vegetable matter, acorns, corn and wild berries constituting about three-fourths of their food for the year. In the summer months they include in their bill of fare forty to sixty per cent of insects. They are often charged with eating the eggs or young of other birds, and in some cases there is no doubt of their guilt. On the whole, though, we believe they do no more harm than good. The Crow is an omnivorous bird; that is, he eats almost everything that could be called food. In the farming regions of the East he becomes a nuisance by pulling up the sprouted corn in the newly planted fields. Here and elsewhere he has the habit of eating the eggs and young of other birds and occasionally carries off young chickens. On the other hand, the Crow benefits the farmer by destroying insects as well as field-mice, young rabbits, and other harmful rodents. On his bill of fare are also reptiles, frogs, toads, fish, crayfish, snails, spiders, and carrion. In total, his food is made up of sixty per cent vegetable matter, thirty per cent animal and ten per cent mineral. The last named is in the form of sand and gravel which he swallows after each meal to assist in digestion. A short time after dining this sand is disgorged, along with the bones and feathers of small *mammals* or birds, and the seeds and skins of fruit. This is done in order not to tax the digestive system with these indigestible substances. The Crow is an interesting fellow after all, and we ought to spare him if he does not make us too much trouble.

In a state of nature—that is, without man's interference directly or indirectly—the numbers of all wild things tend to remain about the same from year to year. Of course at times some favoring conditions permit a particular species to multiply and thrive until it becomes much more abundant than usual, but sooner or later failure of food supply, unfavorable weather, competition with other animals, or the natural enemies of its race, will reduce its numbers to their former proportion. Thus no one species of insect, bird, beast, fish or other form of animal life is allowed to get much of a start of the others. We call this preserving the *balance of power.* Under man's influence this balance of power is often disturbed in one way or another. We grow crops that furnish an abundance of food supply for some animals; by cutting down forests and draining marshes we decrease the food supply of others. Hosts of insects are lured to death by the glare of our electric lights, and thousands of birds are crippled or killed by flying into wire fences or telephone and telegraph lines. Then, too, man protects some animals and makes war on others.

With all these changes resulting from the settling up of a country, how careful we ought to be not to interfere in bird affairs unless we know for a certainty what effect our act will have on our own interests and on nature's balance of power. The killing of a single one of the larger Hawks may mean a dozen more rabbits to gnaw the bark of our young fruit-trees. The shooting of one Oriole in an orchard may result in a thousand more caterpillars to strip the foliage from the same trees. On the other hand, permitting English Sparrows to nest about our homes means fewer of the old familiar birds that are of much more value to us.

It is a law of nature that the stronger preys upon the weaker, so we find that birds even number among their enemies others of their own class. The smaller Hawks strike down many a song-bird in the busy hours of the day, while certain Owls search them out in their roosting places at night. As stated before, Crows and Jays sometimes hunt up the nests of other birds and eat the eggs or young fledglings they find there. The Shrike, a winter sojourner from the North, is an excellent mouser; but when mice are not easily procured he does not hesitate to swoop down upon a luckless Sparrow or other small winter bird. Much as we enjoy the companionship of squirrels, with their pert sauciness and overpowering curiosity, we must admit that many of them follow the example of the Crow and Jay in breaking up the nests they find in trees. Snakes are particularly fond of eggs and young birds. Luckily but few of them can reach the nests unless they are built close to or upon the ground. The appearance of a snake often strikes such terror to a bird that it seems to be powerless to escape. Last, but not least, of the enemies of our birds is the common house cat. A cat that attends strictly to the business of catching mice and other harmful rodents is a valuable possession, but when one gets the bird-killing habit and takes to roaming the fields and woods it should be disposed of at once.

MAN AS AN ENEMY OF BIRDS.

Hunting.—Considering the array of natural enemies that birds have to contend with, civilized people the world over ought to join their forces to protect their feathered friends; but unfortunately they have not yet done so, except in a local way. Many wild birds are used as food—the game-birds—and hence are eagerly sought for by hunters or sportsmen. Though we do not stand in need of such food now, we have not yet quite suppressed certain instincts of our remote ancestors who of necessity killed wild animals to supply their tables. There are three classes of hunters: the man who hunts as a means of recreation, the pot-

hunter, and the market hunter. The last named ought to be suppressed as a public nuisance. The other two owe it to their communities to make good, by organization, by protective measures and by artificial propagation and distribution of game-birds, the losses their acts have entailed. The milliner's hunter or agent should share the fate of the market hunter.

Collecting.—Some people have a fad for collecting postage stamps; others prefer old coins or souvenir postal cards. When we were boys and girls we accumulated hoards of marbles, scrap pictures, and the like. Those things are all right in their way, but a collection of birds' eggs or stuffed birds is a different matter. In order to make such a collection we must destroy the lives of happy, innocent creatures that entertain us with song and protect our orchards and gardens that we may later eat the fruit. A few collections of birds are necessary in order that we understand and appreciate the facts of bird life and then intelligently protect our feathered friends, but none except scientists should assume the right to gather together such treasures. We should accept their verdict as final in all matters of structure, and spare further slaughter in the interests of science. It is no mark of a budding naturalist to collect birds and their eggs. Rather it is an evidence of cruelty and greed of possession. One thing we may do, however, and get much profit and pleasure from it—collect used birds' nests. Early in autumn, after the leaves have fallen, we may find any number of deserted nests, many of them showing a variety of curious materials or peculiar details of construction that make them objects of interest in the schoolroom or in our homes.

Protective Laws.—Most of the states of the Union have enacted some sort of laws giving protection to the birds. Some of these laws enumerate a list of the protected species, and in the case of those that are classed as game give an open season in which they may be shot. It is a much better plan to have two separate laws covering the cases of the game and the non-game birds, respectively. When dealing with the latter the provisions of the law should not merely extend to a small list named in the act but should include all birds except the very few species designated, as the English Sparrow, two or three Hawks, and perhaps the Crow and the Jay in some parts of the country. In Kansas we have about 340 species of birds, a little more than half of which number may be said to be common. Our law as it stands now protects but seventeen of these—ten game-birds and seven song-birds. Eggs and nests of all species may be plundered without

violation of any Kansas statute. The eggs, nests and young of useful birds should by all means have protection.

A model law recommended by the United States Department of Agriculture and by the National Association of Audubon Societies has now been adopted in thirty-five of our states. This excellent progress in protective legislation is largely the result of active work on the part of the various state and local Audubon societies, coöperating with the national association. The efforts of these organizations to arouse a greater interest in bird life and to secure protection for the decreasing numbers of our feathered friends are worthy of our highest commendation. It rests with us to encourage the movement by local organization and personal work. While legal enactment may go far toward perserving our birds, we hope to raise up such a host of friends to them among the boys and girls now reaching toward manhood and womanhood that protective laws will scarcely be necessary. We believe, too, that we may depend upon the farmer and horticulturist of to day to protect his own assets, be they birds or crops. This he cannot do, however, without an intelligent study of their relations to each other. Even if an occasional species be found wanting when weighed in the sordid balance of profit and loss, isn't a flash of color, a burst of song, an awakened inspiration, worth the price of a few cherries or a handful of grain?

We are in receipt of the third annual report of the Kansas Corn Breeders' Association, a neat little pamphlet of 56 pages, edited by L. E. Call, secretary of the association and assistant in the Department of Agronomy of this College. The report contains a list of the officers and members of the association, a list of the premiums, donors and prize-winners of the annual exhibition and contest, and reports of the addresses and papers given before the annual meeting held at this College, December 31 and January 1. It also contains the rules and regulations governing the farmers' contest.

Manhattan will probably become the seat, in the near future, of a Catholic parochial school. Efforts are being made by the Catholics to buy the old Anderson mansion, on Juliette and Pierre streets, for this purpose. The bishop of this diocese was here last week to look at the property and to examine into the proposition. If the school is established the sisters of St. Joseph will have charge of it.

Local Notes.

Professor Walters is building a neat frame cottage on Third street, between Osage and Fremont streets.

The Choral Union sang the selection "Prayer and Finale" from Lohengrin in chapel last Saturday morning.

Professor McKeever delivered an address before the Marshall County Teachers' Association at Blue Rapids Friday of last week.

Plans are being made by the Horticultural Department for extensive experiments in value of fertilizers in the vegetable garden, on the lawn, in the vineyard, and in the greenhouse.

Supt. J. H. Miller, of the Farmers' Institute Department, is expected home to-day (Saturday) from Solomon. This closes the last of a series of farmers' institute trips that Mr. Miller has made in company with Prof. C. A. Kupfer, of the Forestry Division of the Department of Agriculture at Washington.

The new buildings are making rapid progress these fine spring days. The Domestic Science and Art Hall is receiving its roof, over half of the sheeting and a part of its galvanized iron and tin work being in place. The Veterinary Science Hall is above its second floor, except the auditorium annex on the north side, which is now several feet above ground. Both contractors are hoping to complete their buildings some time before the time allotted in the contracts. Work on the new greenhouse will begin again as soon as the glass for the roofs arrives from the factory.

Supt. J. H. Miller, of the Farmers' Institute Department, was in Paola Friday of last week and addressed the Commercial Club. Saturday morning he talked to the farmers on "Corn," and Saturday afternoon he addressed the district school officers on the "Teaching of Agriculture in the Country Schools." Sunday he left for a two-weeks' trip over the main line of the Union Pacific, going as far west as Gove county. He will return east by the Central Branch, holding institute meetings in nearly every town. A. C. Kupfer, of Washington, D. C., Forestry Division, accompanied him.

Prof. O. E. Olin, of Buchtel College, Akron, Ohio, for many years professor of English here, was a welcome visitor at Manhattan and the College this week. He arrived here on Saturday from Eldorado, Kan., where his parents are living, his father being 81 years old. On Sunday he preached in the Manhattan Congregational church. On Monday night he lectured in the same place on the subject "Gee Haw and Gee Whiz," his lecture being the last on their course. On Tuesday morning he attended the morning exercises in the Auditorium and spoke briefly to the students. Professor and Mrs. Willard gave a reception to his old friends in his honor, at their residence on Moro street Saturday night, which was largely attended. The professor looks as bright and vigorous as ever, though he has evidently increased his "rotundity" a few units since he left here eight years ago.

The Board of Regents met in regular session this week and transacted the usual routine business of the spring meeting. A report of the transactions of the session will be found in the next number of the INDUSTRIALIST.

Hon. W. R. Stubbs, formerly speaker of the Kansas House of Representatives and now a prominent candidate for the office of Governor, visited College last Wednesday morning. By request he addressed the students after the morning chapel exercises in the Auditorium. Mr. Stubbs is a forcible speaker and his talk on the duties and opportunities of college students was well received.

Professor Cortelyou reports the following schedule of baseball games for the College team for spring term:

AT HOME.

Topeka White Sox	April 1
Washburn	" 7
St. Mary's	" 9
William Jewell	" 13
Nebraska	(uncertain)
College of Emporia	(uncertain)
Southwestern	April 25
McPherson	" 29
Epworth University	May 2
Fairmount	" 9
Kan. Wesleyan	" 11
Highland Park	" 14
Kan. State Normal	" 23
Drury College	" 27
University of Kansas	June 5
University of Kansas	" 6
Haskell	" 18

ABROAD.

Baker	April 20
Haskell	April 21
St. Mary's	May 4
University of Kansas	June 8

The Fourth Annual Concert of the Choral Union last Thursday night was a grand success. The Auditorium was well filled. Many visitors came from other cities. The cantata, "The Swan and the Skylark," which was given, is not an easy production, but the nearly two hundred young voices under the direction of Professor Valley rendered even the most difficult passages correctly and with comparative ease. The solo singers were well selected and, though several of them have not the strong voices necessary to fill such a large room, they all did admirably and were fully appreciated by the audience. Professor Valley was called out after his bass solo in the first part of the program. It is proper, too, to mention the fine work of the Orchestra under the leadership of Professor Brown. This organization is the pride of the College. Their music is aggressive, harmonious, and well balanced; it has the right orchestra ring to it, it always pleases the audience, no matter whether the rendered selection is of an operatic character, or whether it is a stirring march, a patriotic song, or a dreamy German waltz.

The Library has lately received a large number of new books from McClurg & Co., Chicago. Among the works received is a duplicate set of the "Library of Home Economics," in twelve volumes; also "Hutchinson's Food and Dietetics," Hall's "Inward Light," Tyler's "Growth and Education," Davenport's "Principles of Breeding," etc. There is a small volume among the lot for which we bespeak much interest. It is Gulick's "Efficient Life." This book, dedicated to "President Roosevelt, who sometimes leads the simple life, who often leads the strenuous life, but who always leads the efficient life," is worth reading, even when time is very scarce.

Alumni and Former Students.

Doris Train, '06, who has been teaching mathematics classes here, has taken a position as assistant principal in the Clifton high school, Clifton, Kan.

Viola Norton, '04, left recently for Minneapolis, Minn., where she has a position in the Fairchild Orphans' Home as one of the care takers and assistant teacher in cooking and sewing.

V. L. Cory, '04, writes that he is leaving Washington, D. C., to take up the spring work at the Coöperative Experiment Station, McPherson, Kan., where his address will be 801 Euclid street.

Changes of address: Elsie (Waters) Conner, '98, Alden, Minn.; Chas. R. Hutchings, '94, Box 132, San Luis Potosi, Mexico; Elizabeth Randle, '07, Riley, Kan.; A. J. Cowles, '07, El Dorado. Kan.; Inez L. (Palmer) Barrows, '96, Emmons, Kan.; Emma (Finley) Schroder, '97, 625 North Garey Avenue, Pomona, Cal.

Geo. W. Waters, '86, died February 16, 1908, at his home in Breckenridge, Colo. The cause was neuralgia of the heart and his illness extended over but a few days. A week later his oldest son died of pneumonia at the age of thirteen years. The wife and three children remain to mourn their great loss. Mr. Waters' death came as a great shock to his relatives and friends.

A. E. Oman, '00, who will be superintendent in charge of the government forest reserve at Garden City, has arrived here and has taken charge of the work. The interest taken by the government in the reserve here promises to do much toward the accomplishment of greater results in the growing of trees. The ground has been secured for a forestry nursery and the young trees for planting will be grown in it under the direction of Mr. Oman, who will devote a great deal of his time to the work of starting trees in the forest reserve. The government has also provided for a part of his time to be given in instructing farmers and landowners in tree culture, and in addition to the government forest his work here will likely result in a number of groves being started throughout the country around. Mr. Oman is a graduate of the State Agricultural College and he has also done considerable work along his forestry lines in the graduate school at Yale University. —*Capital.*

Board of Instruction (concluded).

JACOB LUND, M. S. (K. S. A. C.) ..... Superintendent Heat and Power Departmen
JOHN H. MILLER, A. M. ..... Superintendent Farmers' Institutes
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.) ..... Secretary
CLARENCE L. BARNES, D. V. M. (Cornell) ..... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B. S. (Chicago) ..... Assistant Professor of Physics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.) ..... Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard) ..... Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.) ..... Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.) ..... Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K. S. A. C.) ..... Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago) ..... Assistant Professor of Mathematics

---

Miss Ada Rice, B. S. (K. S. A. C.) ..... Instructor in English
Miss Ella Weeks, A. B. (U. of K.) ..... Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount) ..... Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University) ..... Instructor in Veterinary Science
Robert E. Eastman, M. S. (Cornell University) ..... Instructor in Horticulture
Miss Ula M. Dow, B. S. (K. S. A. C.) ..... Instructor in Domestic Science
William L. House ..... Foreman of Carpenter Shop
Miss Gertrude Barnes ..... Assistant Librarian
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.) ..... Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.) ..... Foreman of Foundry
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
Theo. H. Scheffer, A. M. (Cornell University) ..... Assistant in Zoölogy
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C.) ..... Assistant in Printing
Roy A. Seaton, B. S. (K. S. A. C.) ..... Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College) ..... Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale) ..... Assistant in Architecture and Drawing
Chas. Yost ..... Assistant in Heat and Power Department
Earle B. Milliard ..... Foreman of Blacksmithing
J. T. Parker ..... Assistant in Woodwork
J. D. Magee, A. M. (Chicago) ..... Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit) ..... Assistant in German
Miss Florence S. Latimer, B. M. (Ferry Hall Seminary) ..... Assistant in Music
Miss Marjorie Russell (Mechanics' Institute) ..... Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.) ..... Assistant in Botany
Burton Rogers, D. V. M. (Iowa State College) ..... Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal) ..... Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.) ..... Assistant Chemist, Experiment Station
Herbert H. King, M. A. (Ewing College) ..... Assistant in Chemistry
Edw. C. Crowley, Ph. B. (Yale) ..... Assistant in Chemistry
Hugh Oliver ..... Assistant in Heat and Power Department
Miss Charlaine Furley, B. A. (Fairmount) ..... Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (U. of K.) ..... Assistant in Preparatory Department
Leland E. Call, B. S. (Ohio State University) ..... Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University) ..... Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.) ..... Assistant in English
William C. Lane, B. S. (K. S. A. C.) ..... Assistant in Physics
Louis H. Beall, A. B. (Denison) ..... Assistant in English
Miss Flora C. Knight, A. B. (Uni. of Wyoming) ..... Assistant in English
Miss Grace H. Woodward (Boston School of D. S.) ..... Assistant in Domestic Science
Miss Nellie Cave ..... Assistant in Music
Miss Anna I. McKirahan ..... Assistant in Music
Miss Margaret Mack (K. S. N.) ..... Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.) ..... Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.) ..... Assistant in Botany
Charles E. Bassler, D. V. M. (K. S. A. C.) ..... Assistant in Veterinary Science
Miss Mary W. Hancock (Mechanics' Inst.) ..... Assistant in Domestic Art
S. W. McGarrah, A. M. (Grove City College) ..... Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.) ..... Assistant in Animal Husbandry
Arthur L. Peck, B. S. (Mass. Ag. Coll.) ..... Assistant in Horticulture
Kirk H. Logan, B. S. (U. of K.) ..... Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College) ..... Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University) ..... Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College) ..... Assistant in Preparatory Department
Loren Clark ..... Assistant in Printing
Miss Bertha M. Johnston (Simmons College) ..... Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.) ..... Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University) ..... Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.) ..... Assistant in Agronomy
William Neill ..... Dairy Herdsman
G. A. Porteous ..... Herdsman
Wm. A. Lamb ..... Poultryman
Floyd Howard ..... Farm Foreman
William R. Lewis ..... Custodian

THE INDUSTRIALIST

Historical Society

Vol. 34 No. 25

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

The Industrialist.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

TERMS AND VACATIONS.

FALL TERM, 1907, THIRTEEN WEEKS.

Thursday, Friday, and Saturday, November 28, 29, and 30.....Thanksgiving vacation
Thursday and Friday, December 19, 20.....Examination at close of term

WINTER TERM, 1908, TWELVE WEEKS.

Monday, January 6.....Examination for admission, at nine A. M.
Tuesday, January 7.....Winter term begins
Tuesday, January 7.....Short courses in agriculture and dairying begin
Saturday, February 1.....Annual intersociety oratorical contest
Saturday, February 15.....Mid-term examination
Thursday, March 19.....Annual concert
Thursday and Friday, March 26, 27.....Examination at close of term

SPRING TERM, 1908, ELEVEN WEEKS.

Monday, March 30.....Examination for admission, at nine A. M.
Tuesday, March 31.....Spring term begins
Saturday, May 9.....Mid-term examination
Tuesday, May 19.....Beginning of summer course in domestic science
Tuesday and Wednesday, June 16, 17.....Examination at close of year
June 14 to 18.....Exercises of Commencement week
Thursday, June 18, at ten A. M.....Commencement
June 19 to September 16.....Summer vacation

FALL TERM, 1908,

Wednesday, September 16.....Examination for admission, at nine A. M.
Thursday, September 17.....College year begins

BOARD OF REGENTS.

HON. A. M. STORY, President.....Manhattan
HON. J. O. TULLOSS ['99], Vice-President.....Sedan
HON. J. S. MCDOWELL.....Smith Center
HON. GEO. P. GRIFFITH.....Hays
HON. EDWIN TAYLOR.....Edwardsville
HON. W. E. BLACKBURN.....Anthony
PRES. E. R. NICHOLS, Secretary *ex-officio*.....Manhattan

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
CHARLES WM. BURKETT, M. Sc (Ohio State University).....Director Experiment Station
JOHN D. WALTERS, M. S. (K. S. A. C.).....Professor of Architecture and Drawing
JULIUS T. WILLARD, M. S. (K. S. A. C.).....Professor of Chemistry, Vice-Director Exp. Station
BENJ. L. REMICK, Ph. M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B. S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A. B. (U. of K.), M. S. (K. S. A. C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph. M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S. B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M. S. (K. S. A. C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph.D. (Univ. of City of New York).....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B. S. (K. S. A. C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College).....Professor of Economics
JOHN V. CORTELYOU, A.M. (Uni. of Neb.), Ph.D. (Heidelberg).....Professor of German
OLOF VALLEY, B. M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D. V. S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B. S. A. (Iowa State College).....Professor of Animal Husbandry
WALTER E. KING, M. S. (Cornell).....Professor of Bacteriology
THOMAS J. HEADLEE, Ph.D. (Cornell).....Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U. S. A.....Professor of Military Science
JOHN C. KENDALL, B. S. (N. H. A. & M.).....Professor of Dairy Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art
MISS ANNE M. BOYD, A. B., Lib. Sci. (Millikin).....Librarian
ROBERT J. BARNETT, B. S. (K. S. A. C.).....Principal Preparatory Department

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., MAR. 28, 1908. No. 25

Dry-Land Farming.

The Farmers' Institute Department is mailing a pamphlet on "Dry-Land Farming," prepared by Prof. A. M. TenEyck, of this College. The manuscript for the brochure was in part prepared in 1906 and read at the annual meeting of the Coöperative Experiment Association of the Great Plains Area, held at Lincoln, Neb. It received many favorable comments by the press, and the professor was urged to print it in pamphlet form for distribution. It appears now enlarged and improved, and we bespeak for it a wide circulation among western farmers.

The first part of the pamphlet deals with the subject of Drought-Resisting Crops, which are treated in three groups:

1. Early-maturing crops, which grow rapidly and ripen before the available soil moisture is used up, or before the hot, dry weather begins; such as winter wheat and early spring grains.

2. Crops which root deeply and gather their moisture supply from a large volume of soil, such as alfalfa and certain grasses.

3. Hardy, vigorous-growing crops which are able to cease growth when the soil becomes too dry or conditions become too unfavorable, and remain in a dormant state until the rain comes, when they make quick use of the favorable conditions, growing rapidly, simply reaching maturity a little later than would have been the case if they had been subject to no unfavorable conditions during the period of growth, such as Kafir-corn, sorghum, buffalo-grass, and other native grasses of the Western Plains.

After a discussion of these the problem of soil culture is taken up, followed by the important subject of the use of water by the plant and the amounts which are required by the different crops. The pamphlet says:

In the growth of plants, water is needed in the soil for the following reasons:

1. To dissolve the plant-food.
2. To carry the food to the plants and through the plants.
3. It is food in itself to the plants.

4. A certain amount of water in the soil is necessary to give the proper texture favorable for the growth of the plant roots.

5. Water also acts as a regulator of the temperature of the soil, tending to raise the temperature of cold soil by reason of warm rains and by evaporation to keep down the temperature of the soil during the hot summer weather.

6. The bacteria in the soil which assist in decay and in chemical changes by which the plant-food in the soil is made available to the plant, thrive and multiply in the soil only with a favorable condition of soil moisture, heat, and air.

The pamphlet shows that in their growth plants require a large amount of water. "Prof. F. H. King, at the Wisconsin Experiment Station, found that cultivated crops withdrew from the soil during their period of growth from 2.4 to 5.1 acre-inches of water, or 300 to 500 tons of water, for every ton of dry matter produced. From his experiments he has determined that one acre-inch of water is required to produce three and one-third bushels of wheat, or that nine acre-inches of water are sufficient to produce a thirty-bushel wheat crop if this water could all be used by the growing wheat. In like manner, one acre-inch of water is equivalent to five bushels of barley, five bushels of oats, or six bushels of corn. According to his figures it would require only four and one-half acre-inches of water to produce a ton of clover hay, or a four-ton crop of clover hay could be produced by eighteen acre-inches of water. Two acre-inches of water were equivalent to one ton of corn-fodder, and a yield of six tons per acre would require only twelve and one-half acre-inches of water."

An interesting table is appended giving the amounts of water required by the different crops per day, per month, per season, etc.

The pamphlet then discusses the principal dry-land farming crops, taking up wheat first and following this with emmer, barley, winter rye, oats, flax, alfalfa, the sorghums, and the grasses. Concerning wheat it says:

"Wheat is the great money-making crop of a large part of the semiarid West. It is not particularly a drought-resistant crop, although certain varieties appear to succeed better than others in the dry districts. The hard Red Turkey or Russian wheat is the type or variety which has proved hardiest and most productive throughout the western part of the winter-wheat belt. In the spring-wheat states the standard sorts grown are Fife and Bluestem, which are also hard wheats. The Durum or Macaroni wheat is rapidly coming into use in the Northwestern states, and it appears to be hardier and more productive than the ordinary

spring wheats. This wheat was introduced from Russia, where it has long been grown in a climate and under conditions similar to those of the western part of the Northwestern states. It is decidedly a "dry-land farming" crop, and it is the hope of those interested in introducing this wheat that it may prove successful in districts where the rainfall is not sufficient or too uncertain to grow the common wheat, and thus extend profitable wheat growing still farther west and into the semiarid lands of the Mountain states.

"At present, with the varieties grown, the success of the wheat crop in the West is more largely due to the fact that the crop grows during a part of the year when drought is least apt to prevail than to the drought-resistant character of the crop. But wheat is a deep feeder and a rapid grower. The plant draws its food and moisture from a large volume of soil and is able to withstand considerable unfavorable weather conditions; yet the crop is often materially injured and the yield decreased by drought during almost any period of its growth. By hot winds and unfavorable weather conditions a promising crop may be destroyed in a few days.

"Wheat cannot stop growing and remain dormant during an unfavorable period for growth as does Kafir-corn or sorghum. The grain must finish its growth and mature in about a certain period, whatever the conditions for growth may be.

"Spring wheat is not well adapted for growing in Kansas, but with sufficient moisture to start it in the fall, and with the usual spring rains, winter wheat is a profitable crop even in the western counties of the State, where the annual rainfall does not exceed fifteen to twenty inches. However, the methods of growing the crop are crude, and often the western farmer plants so many acres that he is unable to farm the land well, and the result is a poor crop if the season is at all unfavorable.

"Some farmers, however, are adopting better methods. Enough good farming has been done to prove that it pays to cultivate and till the land well. Mr. H. W. Campbell reports remarkable results from the practice of his system of culture on the Pomeroy model farm in Graham county, Kansas. For several years this farm was made to produce twice as much wheat per acre as the average crop in the surrounding country, with no other treatment of the soil except thorough tillage and cultivation.

"At the Fort Hays Branch Experiment Station, in Ellis county, enough has been accomplished in the five seasons since that Station was established to demonstrate that in the semiarid

West good farming pays as well or even better than it does in the rich farming states of the Mississippi valley."

With regard to Central and Western Kansas, and large parts of Nebraska, Oklahoma, and Texas, the pamphlet calls alfalfa the second crop of importance. It draws attention to the fact that, together with corn, alfalfa forms a very favorable field rotation, but it adds:

"As yet, alfalfa is not grown extensively in the western counties of the State, except in localities where irrigation is practiced, but the crop is gradually creeping up the river valleys and into the creek bottoms, each year pushing its area of successful culture a little farther west, and it has even succeeded on the uplands in many of the counties, where it was not thought possible to grow it a few years ago.

"Alfalfa starts slowly, and it is rather difficult, especially in the more unfavorable locations, to get a stand, but when the plants are once established they are extremely hardy, surviving drought and hot winds more successfully than almost any other crop. During periods of extreme drought alfalfa does not grow much; sometimes only one cutting is produced in a season on the uplands in western Kansas, but the plant through its deep and extensive root-system is able to get a sufficient supply of water to sustain life, and when rain comes it revives and grows anew.

"At the Kansas Station alfalfa roots have been traced to a depth of over nine feet, while at the Colorado Experiment Station Dr. W. P. Headden has washed out the roots of an old alfalfa plant to the depth of nearly twelve feet. Various reports have been made, without good authority, of finding alfalfa roots at even greater depths. It is without doubt one of the deepest rooting plants grown on the farm.

"Alfalfa will do more for western agriculture in the next fifty years than all the other crops which farmers may be able to grow in this region. The soil of western Kansas and of much of the Western Plains is usually rich in the mineral elements of plant-food, but, as stated before, it is often lacking in humus, which becomes especially noticeable if the land has been farmed continuously to wheat for a few years. By growing alfalfa it is possible to increase the supply of humus in the soil, and the roots of the plants penetrating deep into the subsoil disintegrate and deepen the soil, and altogether greatly improve its texture, giving it greater capacity to absorb and hold water. The beneficial effect on the soil of growing alfalfa is only incidental to the rapid introduction of the crop throughout the West. The great value of the

crop as a money-maker is the main factor which is introducing it into the agriculture of the Central West. Where alfalfa can be successfully marketed or fed, no other crop grown in the West will yield so great a net profit per acre in a series of years."

The pamphlet then takes up dry-land farming in eastern Colorado and western Kansas, the subject of breeding drought-resisting crops and the problems before the experiment stations in general. The last six pages are given to a discussion of soil culture, implements, plowing, mulching, disking, and harrowing. The pamphlet should be in the library of every western farmer. Copies may be had by addressing Farmers' Institute Department, Kansas State Agricultural College, Manhattan, Kan.

Faculty Changes.

Our readers have undoubtedly seen in the daily papers that Pres. E. R. Nichols, Prof. Henrietta Calvin, of the Department of Domestic Science, and Dr. C. W. Burkett, director of the State Experiment Station, have resigned, and that the Board of Regents has accepted the resignations. That of the President will take effect July 1, 1909, that of Mrs. Calvin on September 1, 1908, and that of Doctor Burkett, September 1, 1908.

President Nichols announced his resignation last Tuesday morning after the chapel exercises in the Auditorium. The other resignations became public through statements made by the professors themselves. As the Manhattan papers have published lengthy articles concerning the matter, we can do no better for our readers than make a few excerpts from one of them.

"In announcing his resignation yesterday morning President Nichols began by saying that instead of announcing the suspension of students he was going to reverse the order and announce his own suspension from the chief office of the College. Continuing he gave a brief history of the school under his management, comparing it with other agricultural colleges. An interesting fact he brought out was that the average cost to the State per student per year under his management had been $104. This includes buildings, apparatus, teachers, heat, light, and every expense. This brought up the unpleasant part of his administration. He said it was impossible for him or for anyone else to please everyone any time or to please any one all the time. He likened the College to a big family, saying that it was often the case where some member of the family got something that another wanted, which resulted in dissatisfaction and complaints to the head of the house.

"Continuing, in part he said: 'Nine years ago, when I took charge of this school, things were different from now. In those days the President taught a class or two just as any other professor, and in doing so was in closer touch with the student body as to his needs and desires than the president of to-day can be.'

"Senator Taylor, a member of the Board of Regents, followed President Nichols. He said: 'The Board of Regents has accepted President Nichols' resignation, and it now entertains not only the hope but the confident expectation that whatever misunderstandings may have arisen between the President and any member of the Faculty, or between different members of the Faculty, or between any officer of the College and any portion of the student body, that all will be forgotten now and that we shall all enter upon an era of mutual forbearance and self-control. There need be no misgivings that President Nichols' efforts on behalf of the College or any department of the College will be relaxed. Relieved, as he now will be, from many vexatious questions, he will be situated advantageously in many respects to give the College the best year's administration it has had during what will then be his ten years' incumbrency of the office of President.

"'The Board will at once take action upon the question of securing a new head-master, and in the months which will elapse before he can be seated, the Board will take for granted that every member of the teaching force, and the members of the student body also, will go about their respective tasks and duties without check or pause on account of this incident. No member of the Faculty, I am sure, will withhold the utmost of his coöperation, and I am confident that the members of the student body will do their part in maintaining order in the ranks and keeping step with the College march. We have lost some headway. We must make up for lost time.

"'Thanking you for your attention, I offer this suggestion to teachers and students—that we all throw in the high gear.'

"During the year before President Nichols' resignation takes effect the Regents will try to find a man to fill the vacancy. They say positively that they have no one in view. Gossip at the College has it that it is extremely unlikely that the honor will go to any member of the Faculty.

"To some Manhattan people, that President Nichols had resigned was rather welcome news. On the other hand, there were many who regretted it sincerely. There is the undeniable fact that President Nichols took hold of the institution when its financial

condition was almost hopeless and by judicious management the institution has been put on a thoroughly sound financial basis. Whatever may be said about President Nichols, it will be impossible to rob him of the honor of this great achievement. With President Nichols at the head of the institution, the Kansas Agricultural College has grown and become a power in the State. To a *Mercury* reporter President Nichols said he had nothing to add to the statement regarding his resignation made yesterday at chapel exercises.

"Doctor Burkett's resignation has nothing to do with the resignation of President Nichols. He is quitting to take another position. A short time ago Doctor Burkett received an offer of a position as managing editor of the Orange-Judd publications. In reply he said he would take the position at a figure he felt sure they would not accept, but a few days ago received a telegram from the company accepting his offer. He immediately tendered his resignation to the Board of Regents. Doctor Burkett was getting $3600 as director of the Experiment Station. As manager of the Orange-Judd papers he will receive $6000 a year. His headquarters will be in New York.

"Mrs. Henrietta Calvin, head of the Department of Domestic Science, declined to give any reasons for her resignation or to say what position she had in view."

A Tribute to Doctor Kellerman.

The sudden death down in the wilds of Central America of Dr. William A. Kellerman has deeply affected his former students at this College. A number of letters from College alumni have been received since the publication in the INDUSTRIALIST of his obituary, all of them proving the genuine esteem in which the professor was held by those whom he taught and educated. The following lines, dated at Morris, Minn., and addressed to Professor Walters, are a beautiful tribute to his memory:

"I want to add my own small word to your estimate of Professor Kellerman. He was a splendid man. I do not know of one who taught me more, particularly as to fundamentals or first principles. His fine scientific mind not only enabled him to understand, but his fine teaching ability made him understood. Subjects deemed 'dry' when discussed by many good teachers were fascinating when taught by him. His ability to have a student find the truth for himself, and to express that truth in words and do it accurately, I have never seen equaled. His chapel lectures, too, all on scientific topics, were all as finished as though written

for publication, although we later understood that he had not even a written outline.

"I shall never forget Professor Kellerman's fine presence and carriage. Once some boys gave him a gold-headed cane, and everyone else laughed at its inappropriateness—there was so little about him to suggest such a gift. If we forgot to tell him these things while he lived it was because we had no thought that he was so soon to leave us.

"In the hope that you may have yourself many more years of usefulness and happiness with us, I am J. B. BROWN, '87."

Attorney General Jackson Rules on Farmers' Institute Appropriations From County Commissioners.

Several boards of county commissioners have hesitated to appropriate funds for farmers' institutes, not because of lack of sympathy, but because they did not understand the law. It was therefore deemed wise to submit the matter to the Attorney General, whose opinion is here given for the benefit of all institute officers and county commissioners.

AN ACT RELATING TO FARMERS' INSTITUTES.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. Whenever any county farmers' institute association in this State shall have elected president, vice-president, secretary and treasurer, and adopted a constitution and by-laws for its government, it shall be the duty of the county commissioners of such county to appropriate annually the sum of fifty dollars, or so much thereof as may be necessary, to defray the legitimate expenses of a two-days' institute at such place in the county as may be designated by the executive committee of the institute association; provided that this act shall not apply to institute associations that have not been in successful operation at least one year.

SEC. 2. This act shall be in force from and after its publication in the statute-book.

TOPEKA, KAN., Dec. 19, 1907.

Mr. J. H. Miller, Manhattan, Kansas.

DEAR SIR: In answer to your letter of December 18, '07, relative to the refusal of some of the boards of county commissioners to appropriate the $50 provided by the act of 1903 for Farmers' Institutes, I have to say:

The statute is mandatory upon the county commissioners to appropriate $50 when the farmers' institute shall have been organized and in existence for one year, as provided by the statute.

I find no statutory regulations as to what are legitimate expenses of a farmers' institute, and in the absence of any statutory regulation or direction, the directors or executive committee of

the institute association are the judges as to what are the ligitimate expenses of an institute.

If the board of county commissioners refuse to appropriate the $50, it would be the duty of the county attorney to mandamus the board to compel them to make the appropriation, this to be done upon complaint and relation of some officer of the farmers' institute. If the farmers' institute attempts to dissipate the fund and direct it to other uses than those legitimately coming within the purview of a farmers' institute, then it would be the duty of the county attorney to prevent such dissipation of the funds.

As to whether or not premiums for corn contests are legitimate expenses of a farmers' institute, it would seem to me the institute itself would be the best judge. If such corn contests do more good in promoting the interests of the farmers generally than other lines of expenditure, such as expenses of lectures, etc., then it would seem to me that the paying of premiums for such contests would be a legitimate expense, but, as indicated above, I am of the opinion that the executive committee or the institute itself are the best judges as to what are the legitimate expenses of such institute.

When the institute is organized and in existence for more than one year, as provided for by said statute, it is incumbent upon the board of county commissioners in the county in which such institute is organized to make the appropriation.

Very truly yours,

F. S. JACKSON, *Attorney General.*

Kansas Boys' Corn Contest.

One of the marked features of the Contest this year is the interest shown in western counties where not much corn has been grown. Neither the Institute nor the Agronomy Department of the Agricultural College has desired to unduly encourage the growing of corn in these counties, but the farmers believe that by adapting seed to their conditions and by better cultural methods they can grow corn with profit, although they do not expect large yields. For the most part committees are securing western-grown seed, many of them getting seed from the Experiment Station at Hays for the boys.

But while the interest is growing in western counties there are a few counties in eastern Kansas where committees have allowed the work to drag. Hundreds of the leading farmers of Kansas consider this "Boys' Corn Contest" movement of very great economic as well as of great educational value, and it will be un-

fortunate if any county in eastern Kansas drops out of the movement this year. Some committees have called meetings to decide whether a contest should or should not be held. This is a mistake. The simplest method is to announce a contest and give the boys a chance to enroll, and then the committee will have a leverage to do all the rest. Then some institute officers plan to do too much of the work themselves instead of appointing committees to help. There are plenty of willing workers if work is assigned.

But farmers and business men who believe in the movement should not remain silent, but should encourage the boys to join the contest and should encourage the institute officers by offering assistance. These institute officers serve without pay and ought not to be expected to do all the work for these contests. Lend a hand. May I ask every man and woman who reads this who believes in this work for the Kansas boys to write at once or telephone to the local institute officers a word of encouragement and then "talk it up" among the boys? J. H. MILLER.

Superintendent Agricultural College Extension,

Farmers Are Adopting Suggestions Given By K. S. A. C.

Robert Thompson, who lives up near Garrison on the Pottawatomie side, was in Manhattan recently to confer with County Superintendent Wetzig in regard to consolidating six school districts in the neighborhood of Garrison. Mr. Thompson has other progressive ideas beside the one regarding rural school management. "Up in our country," he said, "we wouldn't any more think of raising chickens that weren't thoroughbreds than we would of raising hogs that weren't thoroughbreds; and we wouldn't raise anything but thoroughbred hogs any more than we would think of breeding to anything but thoroughbred bulls; we wouldn't think of breeding to anything but thoroughbred bulls any more than we would think of breeding to anything but thoroughbred horses; and we wouldn't breed to anything but thoroughbred horses any more than we would not 'drag' our roads. Most of our boys up in our country have attended the College down here, and they have introduced some advanced methods into our farming, and we are all making money. Some of the things our boys do don't look just right to me, but they get the results. Last winter one of my boys began feeding some hogs. It looked to me as if he was mighty extravagant with his feed, but I thought I'd let him go on and learn by experience. But I never made as much money on a bunch of hogs, with feed the price it was then, as he got out of that bunch." Mr. Thompson is not a candidate for governor.—*Mercury.*

Local Notes.

Spring term begins Tuesday, March 31, and ends Thursday, June 18.

Professor Kinzer went to Kansas City on Thursday to attend the Tomson Shorthorn sale.

Assistant Call, of the Agronomy Department, addressed a farmers' meeting at Broughton last Monday.

The Dramatic Club has hired Miss Lincoln, of Topeka, to train the cast for their play, but on account of her illness there have been no rehearsals so far.

The students called on Professor Freeman for a speech from the chapel platform one morning this week, and he told them that the little girl was doing well and was already giving evidences of becoming a great singer and football rooter.

In the final games of the girls' basket-ball tournament the junior girls won from the sophomores, thereby gaining the interclass championship and the Askren trophy. The senior-freshmen game stood 17 to 1 in favor of the seniors.

The Regents have given Kedzie Hall to the Printing Department. Superintendent Rickman will move into his new quarters some time next summer; that is, as soon as the Domestic Science and Art Departments can be transferred into the new Domestic Science and Art Hall.

The Board of Regents were in session all of last week and several days of this week. They spent much time over the revision of the courses of study, the financial condition of the College, the list of employees for next year, etc., and adjourned to meet again early in April.

A traveling hypnotist gave a public exhibition on the streets of the city one day last week and showed his tricks before large audiences during the week in the opera-house. Many students claim to have been so completely hypnotized by the "Doctor" that they made involuntary temperance speeches from the platform and ran around in the audience catching eleven-inch butterflies.

The third annual exhibition of the winter term work of the Department of Domestic Art was held on the second floor of Kedzie Hall last Wednesday. Several hundred visitors from the College, the city and from many parts of the State thronged the rooms from morning till night. The exhibit consisted of over a hundred cloth suits, an equal number of suits of underwear, and over a dozen wash suits. All were tastefully arranged and drew highly favorable comments from the visitors. The dresses were mostly the work of the regular four-year classes, but there were also many fine garments made by the girls of the short course. The general verdict was that it was by far the best exhibition of the kind ever given at the College and a credit to Supt. Antonetta Becker and her assistants.

The Farmers' Institute Department reports that legal county organizations of farmers' institutes now exist in one hundred one of the one hundred five counties in Kansas. Two of these four unorganized counties were organized two years ago, but on account of lack of interest they have ceased to exist. Another of the four has a very successful local institute in a corner of the county, with a membership of over fifty.

Supt. J. H. Miller, of the Farmers' Institute Department, reports a *bona fide* membership roll of over four thousand men in the various county and local institutes of Kansas, all having paid a local membership fee. Only one member of a family is enrolled. He thinks this represents the "gilt-edged" farmers of Kansas. It constitutes a sort of correspondence school for the Institute and Extension Department of the College.

The first of the cross-country runs took place Saturday afternoon of last week. The runners started at the corner of the Coöperative bookstore and ran around the quarter-section forming the campus, a distance of about two miles. The final will be held to-day (Saturday) at the city park. Professor Hamilton offers a gold medal for the winner in these contests and the Athletic Association will award a monogram to any man breaking the records. Thirteen students entered in the first run. On account of the high wind and dust the time was not very satisfactory. Austin crossed the line in ten minutes and forty seconds, and Phenis in ten minutes and forty-three seconds. The first six men were but eighteen seconds apart. They were Austin, Phenis, McNall, Calvin, Detwiler, and Gingery.

A Manhattan correspondent of the *Western Horseman*, Indianapolis, Ind., in a recent letter said: "Professor Dickens has been having all sorts of luck with his mare Brownie, a daughter of Ashland Boy. February 1 she was in good condition and performing her usual service to the surrey. She looked not one-half her twenty-two years, but playing in a paddock the mare fractured her ankle bone and the professor thought it was chloroform for her. She was due to foal March 17, and Doctors Barnes and Bassler, of the Veterinary Department of the Kansas Agricultural College, thought it worth while making an effort to save her. She was removed to the veterinary hospital and a plaster cast was adjusted to the fracture. February 25 she afforded the class in obstetrics a first-class demonstration of a premature delivery. The large box stall was lined with students while the attendants in duck suits and two advisory surgeons furnished an abundance of technical terms. They took that 'incubator baby,' as the boys called the little foal, wrapped it in cotton and covered the same with a muslin 'night-gown' to keep it warm. The boys stayed by the little filly day and night until she, in a week, was able to kick up her heels as do other colts, and at the same time furnish evidence that the veterinary students are being given practical instruction.

Alumni and Former Students.

John F. Ross, '02, who has been in the Indian Service of the Department of the Interior, has been transferred to the Bureau of Plant Industry, Department of Agriculture, and placed in charge of the experimental farm at Amarillo, Texas. There is no doubt that Mr. Ross will give a good account of himself there.

A. B. Kimball, '89, publisher of the Scandia *Journal*, has this to say concerning his latest business venture: "It has been some time since the *Journal* man indulged in his fad of buying up neighboring newspapers. But old habits will return. In response to a somewhat insistent demand that the county seat have a newspaper to represent the principles of progressive republicanism held by a large majority of the voters of the county, we have bought the Belleville *Freeman* from Tom Charles. The paper will be run as a republican paper after the style of the *Journal*. It will continue to be not only the best general *news* paper of the county but will have some mighty interesting political matter in it. This is no new venture. The *Freeman* was ours once before, and started on the road toward success at that time. However, we allowed the politicians to scare us out of it. We have long since ceased to be afraid of them, big or little—if there is any fright it is on the other side. We purpose conducting our newspaper ventures to please just one man and try to please one woman."

The College Weather Signals.

The College weather station began to receive the daily forecasts from the Government the first of March and will in the future display the flags which indicate the forecast. The flags represent the forecasts for the twenty-four hours beginning at 8 P. M. of the day of display, and for the benefit of those not familiar with the signals they are given below:

Kansas State Agricultural College Weather Signals

Forecasts furnished by U. S. Department of Agriculture, Weather Bureau.

EXPLANATION OF WEATHER FLAGS.



INTERPRETATION OF DISPLAYS.

No. 1, alone, indicates fair weather, stationary temperature.
No. 2, alone, indicates rain or snow, stationary temperature.
No. 3, alone, indicates local rain or snow, stationary temperature.
No. 1, with No. 4 above it, indicates fair weather, warmer.
No. 1, with No. 4 below it, indicates fair weather, colder.
No. 2, with No. 4 above it, indicates rain or snow, warmer.
No. 2, with No. 4 below it, indicates rain or snow, colder.
No. 3, with No. 4 above it, indicates local rain or snow, warmer.
No. 3, with No. 4 below it, indicates local rain or snow, colder.

WILLIS L. MOORE, *Chief U. S. Weather Bureau.*

Board of Instruction (concluded).

JACOB LUND, M. S. (K. S. A. C.) ..... Superintendent Heat and Power Departmen
JOHN H. MILLER, A. M. ..... Superintendent Farmers' Institutes
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.) ..... Secretary
CLARENCE L. BARNES, D. V. M. (Cornell) ..... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B. S. (Chicago) ..... Assistant Professor of Physics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.) ..... Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard) ..... Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.) ..... Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.) ..... Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K. S. A. C.) ..... Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago) ..... Assistant Professor of Mathematics

---

Miss Ada Rice, B. S. (K. S. A. C.) ..... Instructor in English
Miss Ella Weeks, A. B. (U. of K.) ..... Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount) ..... Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University) ..... Instructor in Veterinary Science
Robert E. Eastman, M. S. (Cornell University) ..... Instructor in Horticulture
Miss Ula M. Dow, B. S. (K. S. A. C.) ..... Instructor in Domestic Science
William L. House ..... Foreman of Carpenter Shop
Miss Gertrude Barnes ..... Assistant Librarian
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.) ..... Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.) ..... Foreman of Foundry
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
Theo. H. Scheffer, A. M. (Cornell University) ..... Assistant in Zoölogy
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C.) ..... Assistant in Printing
Roy A. Seaton, B. S. (K. S. A. C.) ..... Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College) ..... Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale) ..... Assistant in Architecture and Drawing
Chas. Yost ..... Assistant in Heat and Power Department
Earle B. Milliard ..... Foreman of Blacksmithing
J. T. Parker ..... Assistant in Woodwork
J. D. Magee, A. M. (Chicago) ..... Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit) ..... Assistant in German
Miss Florence S. Latimer, B. M. (Ferry Hall Seminary) ..... Assistant in Music
Miss Marjorie Russell (Mechanics' Institute) ..... Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.) ..... Assistant in Botany
Burton Rogers. D. V. M. (Iowa State College) ..... Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal) ..... Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.) ..... Assistant Chemist, Experiment Station
Herbert H. King, M. A. (Ewing College) ..... Assistant in Chemistry
Edw. C. Crowley, Ph. B. (Yale) ..... Assistant in Chemistry
Hugh Oliver ..... Assistant in Heat and Power Department
Miss Charlaine Furley, B. A. (Fairmount) ..... Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (U. of K.) ..... Assistant in Preparatory Department
Leland E. Call, B. S. (Ohio State University) ..... Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University) ..... Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.) ..... Assistant in English
William C. Lane, B. S. (K. S. A. C.) ..... Assistant in Physics
Louis H. Beall, A. B. (Denison) ..... Assistant in English
Miss Flora C. Knight, A. B. (Uni. of Wyoming) ..... Assistant in English
Miss Grace H. Woodward (Boston School of D. S.) ..... Assistant in Domestic Science
Miss Nellie Cave ..... Assistant in Music
Miss Anna I. McKirahan ..... Assistant in Music
Miss Margaret Mack (K. S. N.) ..... Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.) ..... Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.) ..... Assistant in Botany
Charles E. Bassler, D. V. M. (K. S. A. C.) ..... Assistant in Veterinary Science
Miss Mary W. Hancock (Mechanics' Inst.) ..... Assistant in Domestic Art
S. W. McGarrah, A. M. (Grove City College) ..... Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.) ..... Assistant in Animal Husbandry
Arthur L. Peck, B. S. (Mass. Ag. Coll.) ..... Assistant in Horticulture
Kirk H. Logan, B. S. (U. of K.) ..... Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College) ..... Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University) ..... Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College) ..... Assistant in Preparatory Department
Loren Clark ..... Assistant in Printing
Miss Bertha M. Johnston (Simmons College) ..... Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.) ..... Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University) ..... Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.) ..... Assistant in Agronomy
William Neill ..... Dairy Herdsman
G. A. Porteous ..... Herdsman
Wm. A. Lamb ..... Poultryman
Floyd Howard ..... Farm Foreman
William R. Lewis ..... Custodian

THE INDUSTRIALIST

Historical Society

Vol. 34 **No. 26**

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

The Industrialist.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

TERMS AND VACATIONS.

FALL TERM, 1907, THIRTEEN WEEKS.

Thursday, Friday, and Saturday, November 28, 29, and 30.....Thanksgiving vacation
Thursday and Friday, December 19, 20.....Examination at close of term

WINTER TERM, 1908, TWELVE WEEKS.

Monday, January 6.....Examination for admission, at nine A. M.
Tuesday, January 7.....Winter term begins
Tuesday, January 7.....Short courses in agriculture and dairying begin
Saturday, February 1.....Annual intersociety oratorical contest
Saturday, February 15.....Mid-term examination
Thursday, March 19.....Annual concert
Thursday and Friday, March 26, 27.....Examination at close of term

SPRING TERM, 1908, ELEVEN WEEKS.

Monday, March 30.....Examination for admission, at nine A. M.
Tuesday, March 31.....Spring term begins
Saturday, May 9.....Mid-term examination
Tuesday, May 19.....Beginning of summer course in domestic science
Tuesday and Wednesday, June 16, 17.....Examination at close of year
June 14 to 18.....Exercises of Commencement week
Thursday, June 18, at ten A. M.....Commencement
June 19 to September 16.....Summer vacation

FALL TERM, 1908,

Wednesday, September 16.....Examination for admission, at nine A. M.
Thursday, September 17.....College year begins

BOARD OF REGENTS.

HON. A. M. STORY, President.....Manhattan
HON. J. O. TULLOSS ['99], Vice-President.....Sedan
HON. J. S. MCDOWELL.....Smith Center
HON. GEO. P. GRIFFITH.....Hays
HON. EDWIN TAYLOR.....Edwardsville
HON. W. E. BLACKBURN.....Anthony
PRES. E. R. NICHOLS, Secretary *ex-officio*.....Manhattan

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
CHARLES WM. BURKETT, M. Sc. (Ohio State University).....Director Experiment Station
JOHN D. WALTERS, M. S. (K. S. A. C.).....Professor of Architecture and Drawing
JULIUS T. WILLARD, M. S. (K. S. A. C.).....Professor of Chemistry, Vice-Director Exp. Station
BENJ. L. REMICK, Ph. M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B. S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A. B. (U. of K.), M. S. (K. S. A. C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph. M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S. B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M. S. (K. S. A. C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A. M. (U. of R.), Ph. D. (Univ. of City of New York).....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B. S. (K. S. A. C.).....Professor of Domestic Science
RALPH R. PRICE, A. M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A. M. (Central Wesleyan College).....Professor of Economics
JOHN V. CORTELYOU, A. M. (Uni. of Neb.), Ph. D. (Heidelberg).....Professor of German
OLOF VALLEY, B. M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D. V. S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B. S. A. (Iowa State College).....Professor of Animal Husbandry
WALTER E. KING, M. S. (Cornell).....Professor of Bacteriology
THOMAS J. HEADLEE, Ph. D. (Cornell).....Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U. S. A.....Professor of Military Science
JOHN C. KENDALL, B. S. (N. H. A. & M.).....Professor of Dairy Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art
MISS ANNE M. BOYD, A. B., Lib. Sci. (Millikin).....Librarian
ROBERT J. BARNETT, B. S. (K. S. A. C.).....Principal Preparatory Department

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., APR. 4, 1908. No. 26

Pure Milk.

For many years states and cities have been framing and putting into effect laws governing the sale of milk. Milk is extremely variable in percentage of fat, and it is easily adulterated. The consumer must rely for a good, unadulterated product very largely upon the honesty of the one who sells it. Our cities especially have realized this, and to prevent discriminations by unscrupulous persons have in various ways sought to regulate the sale of milk. The usual method is that of setting arbitrary standards regulating the minimum per cent of fat and solids not fat the milk should contain. The fat is the most variable and the most valuable of the constituents of milk, so milk is ordinarily conceded to be valuable for human food in proportion to the amount of fat it contains. Where milk is used in large quantities as food it may contain too much fat, or be too low in fat content to be easily assimilated. Milk, to be an ideal food for the great mass of people, should contain about 4 per cent of fat. If consumed in large quantities and the fat very much exceeds this per cent, milk does not digest readily. On the other hand, if the fat is 3 per cent or under, the casein and other solids are in excess of the fat and the milk is rendered less digestible. The removal of the fat does not affect the other solids more than to increase their percentage. Such milk is just as valuable as a food, except that the shortage of fat must be supplied in some other form of food.

The object of the writer is to outline clearly the weakness of the standards now in force, such as are established by many cities, and to show how best the milk supply may be controlled with equal justice to all. The standard of milk is placed upon the fat, which is a very changeable constituent; in fact, the most changeable constituent of milk. It varies not only in different breeds of animals, but in individual animals. It also varies according to the period of lactation and the amount of milk given. It is influenced by the nervous conditions of the cow, caused by fright or sexual excitement. If the fat is so changeable and varied in not only different breeds, but also in individual animals, how then can we use it as a standard?

Some cities have set the standard as low as 2.5 per cent fat, with a total per cent of solids 12.0, while the average standards require 3 per cent of fat and 12 per cent total solids. The total solids is found by first testing the milk for fat and then adding the fat to the amount of solids not fat, which is found by the specific gravity or the lactometer test. The solids not fat in pure milk seldom, if ever, are less than 8 per cent or more than 9 per cent. It is generally taken from the average of all tests which have been conducted by the various experts and experiment stations. Pure milk cantains 87.5 per cent of water and 12.5 per cent total solids, or, in other words, an average of 3 to 4 per cent of fat and 8 to 9 per cent of solids not fat. Therefore, less than 8 per cent of solids not fat shows evidence of adulteration by water, or milk showing more than 9 per cent of solids not fat justifies suspicion of being adulterated by the removal of fat.

I wish at this point to make clear that it is upon the constituents of milk known as the solids not fat that we base our test as to purity, as these solids are the least changable. Let us compare some of the standards. For instance, take the standard of 2.5 per cent of fat and 12 per cent of solids not fat. If we subtract the fat from the total solids we will have 9.5 per cent of solids not fat, or a lactometer reading of 34.60, with 2.5 per cent of fat. Such milk tested by an expert would be considered as skimmed. Yet the law justifies the sale of the same. Then, take the average standard, which is 3 per cent fat and 9 per cent of solids not fat. Supposing a dairyman is delivering milk from a herd that is producing milk with a lactometer reading of 32.5 and a fat test of 4 per cent, the milk has 12.92 per cent of total solids and a fat content over the standard of 25 per cent. He may remove, then, 25 per cent and still have the milk contain 3 per cent of fat, and by removing the fat he increases the lactometer reading .8 per cent, which gives him 9.12 per cent of solids not fat, or 12.12 per cent of total solids. I leave it to all fair-minded persons to consider whether the standard is just to all.

The yearly average of fat produced by the cows in the United States is taken as 3.5 per cent, yet our cities declare 3 per cent as the standard. I am in favor with the practice of furnishing the consumer with a perfectly pure article of food placed upon the market and sold according to its quality. This will permit and encourage the breeding of cows that will produce a high class of milk at an increased price. It will also permit of breeding and developing cows that will produce a large quantity of milk of a lower per cent of fat, which can be furnished to the poor of our cities at a lower price. To overcome any danger of fraud the

herds should be the standard. If any producer be found delivering milk containing less fat or total solids than is given by the herd he should be considered as a criminal and prosecuted as such. This would necessitate the employment of some competent person to test the milk that is delivered by the producer or the dealer, and where the product is of questionable purity the herd should be milked and the milk tested.

While it is important that milk should be unadulterated, it is much more important that it should be sanitary. I would not attempt to create excitement, but I desire to awaken every reader to his personal responsibility, not only to himself, but also to his brother.

I wish especially to appeal to the parents of children. We, as parents, are responsible for the health of our children. The child that is born healthy, receives only healthful food, is kept clean and allowed to breathe pure air, will develop to manhood or womanhood prepared to take his place in life's pursuits.

The government has of late been doing a grand work in the enforcement of the pure-food law, but up to the present time little or nothing has been done in the State of Kansas to secure a certified, sanitary milk supply. Information from the most reliable source gives the death rate in the United States, caused by preventable diseases, at 160,000 per year, and what is still more appalling, nearly one-half of these die under 5 years of age, and 25 per cent between 5 and 35 years. The most common of the preventable diseases which cause such a loss of innocent life are tuberculosis, typhoid fever, and cholera. These are attributed to impure milk and food, of which impure milk is the most dangerous, as it is used without cooking. It has been proven without a doubt that tuberculosis is more or less prevalent among our dairy cattle. Milk being a food product that is usually consumed within a few miles at most from the place where it is produced, it becomes a matter of local and personal responsibility. Therefore, each town or city should see to it that the milk is pure.

The bulk of the milk purchased for domestic use is consumed by the children, and it forms the greater part of their sustenance. Hence, the health of our future generation will depend largely upon the sanitary conditions of the milk supply. The reports and tests made by the United States experiment station have proved that tuberculosis is most prevalent among cattle. Hence, in the interest of the State cattle and hog industry they authorize that the skim-milk of the creameries be pasteurized before feeding. Why, then, should not the herds supplying milk, especially for

town and city trade, be tested for tuberculosis, and producers prohibited from supplying milk unless their herds have been tested and found healthy?

Again, other diseases have been traced to the milk supply. The writer has in mind two instances where typhoid epidemic was traced to the milk supply, an individual producer having washed his utensils with water which was badly infected with the typhoid bacillus. Dr. Santee, of Washington, D. C., fully realized this when he devoted his time so energetically to the dairy herd scoring project, which has had much to do with the betterment of the milk supply for cities. I trust this good work may continue until the sanitary conditions of our milk supply will be unquestionable.

Following is a draft for a city ordinance regulating the sale of milk. It is submitted with the hope that it will be carefully studied by all parties having a voice in the framing of regulations and ordinances:

An ordinance regulating the sale of milk in the city of ———, and providing for penalties for the violation of any section or sections of this ordinance, and the appointment of a competent milk inspector, fixing his salary and repealing all ordinances in conflict herewith.

Be it ordained by the Mayor and Councilmen of the city of ———, *in the State of Kansas:*

SECTION 1. It shall be unlawful for any person to sell or offer for sale any milk or cream within the city of ——— without first having registered his name, place of business and number of cows with the city clerk of the said city of ———, in a book kept by the clerk for this purpose. The registration shall be required immediately after the taking effect of this ordinance, and during the month of December of each year thereafter as long as the person continues in business. The city clerk shall issue a license and number to the person registering, upon the payment of fifty cents per cow, provided the said person is willing to be governed by said ordinance. The number shall be placed on the wagon and delivery cans in plain figures not less than one and one-half inches in length. The name of the owner, company or corporation must also appear on the wagon or in a conspicuous place in the place of business.

SEC. 2. The registration fee must be paid before the license shall be granted, and this license shall expire on the thirtieth day of December each year. Said license shall at all times be carried by the persons when delivering milk, or be placed in a conspicuous

place in the place of business, and shall be shown on demand to any customer or officer of said city. Any person, company or corporation engaged in the sale of milk shall be liable to a fee of $50 for each herd supplying milk, unless the said herd be registered and a license granted, a copy of which shall be produced by the said person, company or corporation upon the demand of the inspector, or shall pay to the inspector $50, which shall be in lieu of license fee for the said herd.

SEC. 3. *Unwholesome Milk Defined.*—Milk produced from cows kept in an unsanitary, poorly lighted or poorly ventilated stable, or produced by cows not kept clean, or any milk obtained from cows that are fed on city slop or waste from the kitchen or refuse matter from any starch factory, decomposed feed, stable manure, bedding, or any article of food which is fermenting or fermented other than clean, well-cured silage; or milk stored in an unsanitary place; or milk kept or delivered in vessels not properly cleaned, or vessels which are rusted, or in wooden vessels. It shall be unlawful for any person to sell or offer for sale or exchange milk known as "unwholesome milk."

SEC. 4. It shall be unlawful for any person to offer for sale, or have in his possession with intent to sell, any milk from which any cream has been removed, or from which any strippings or foremilk has been kept back or removed, unless the utensils in which said milk is stored and sold is marked in clear letters as skimmed-milk, with the per cent of fat it contains.

SEC. 5. It shall be unlawful for any person to sell, offer for sale, or have in his possession with intent to sell, any milk to which any water has been added, or milk showing less than twelve per cent of milk solids, which solids shall contain not less than 3.25 per cent of fat, unless branded in clear letters and figures, showing the per cent of fat the milk contains. The person purchasing the same must be informed by the salesman that the milk is not up to the standard required. The salesman of said milk shall furnish to the purchaser a statement to the effect that this milk sold is under standard. It shall be unlawful to sell, offer for sale, or have in possession with intent to sell, any milk produced by any cow or cows before the sixth day after freshening, and twenty days before freshening. It shall also be unlawful to sell or offer for sale any cream containing less than 18 per cent of fat, unless the said cream be labeled showing the per cent of fat contained therein, and a due allowance made for the shortage of fat.

SEC. 6. It shall be unlawful for any person to sell or offer for

sale any milk or cream which has been milked or handled by any person suffering from or coming in contact with any contagious or infectious disease.

SEC. 7. Any person in the city of———receiving cream or milk for sale shall keep said milk in a clean, well-lighted, well-ventilated and sanitary place, and it shall be the duty of the said person to thoroughly cleanse all milk or cream utensils as soon as empty. It shall be unlawful for any person or persons handling milk or cream to use any of the milk or cream utensils for the purpose of storing any substances other than milk or cream.

SEC. 8. It shall be unlawful for any person to sell, offer for sale, trade or exchange milk produced by unhealthy cows or by cows milked or handled in the same stable or corral or place of milking where such diseased cows are kept. The health of the cow shall be determined by a competent veterinarian.

SEC. 9. Any milk or the products made therefrom found to contain any form of preservatives shall be condemned for food, and any person selling, offering for sale, trading or exchanging the same shall be considered guilty of a misdemeanor.

SEC. 10. It shall be the duty of the said inspector to visit or cause to be visited as frequently as he deems necessary, all dairies, and inspect and score the same according to the score-card authorized and used by the Bureau of Animal Industry of the United States Department of Agriculture. A copy of the score-card shall be left with the owner, and such information given as will assist the producer to improve the sanitary conditions or remedy such defects as the score-card indicates. A copy of the score shall be filed in the inspector's office. The said inspector shall make reports to the city clerk and to the State Dairy Commissioner at Manhattan, Kansas, not later than the fifth of February, June, and October, on blanks provided by the said commissioner.

SEC. 11. The inspector must be a competent man, and he shall prove his proficiency by passing an examination, both oral and written, which shall be prepared and given under the direction of the State Dairy Commissioner and the Professor of Dairy Husbandry of the Kansas State Agricultural College. The said inspector shall have the power to enter without previous notice any dairy, milk depot, ice-cream or milk sales room, or any place where milk or cream or their products are kept, sold, or prepared for sale, and take such amount as will prove a sufficient sample to perform the necessary tests such as may be desired by the said inspector. Where the said inspector finds any milk indicating the presence of

water or the removal of fat, it shall be his duty to visit the herd where such milk is produced and see the herd milked and the milk mixed, after which he shall take a sample of milk and seal the same with the seal of his office and keep said sample locked in a cool place until he has secured a sample of the next regular milking. The sample must be in proportion to the milk given at each milking. The per cent of solids not fat and the fat of these collected samples shall be considered the standard of the said herd, provided these samples are collected within four days from the time the suspected sample was collected and tested.

SEC. 12. The inspector of milk shall provide himself with proper instruments for testing the purity of milk, and it shall be his duty to stop any wagon or person carrying milk for sale or selling, or offering for sale, milk in the city of ——— at any time or place and test the same; provided, the inspector of milk shall not detain any wagon or person engaged in carrying milk for a longer period than is necessary to test the same, and he may confiscate such milk if found impure as specified in this ordinance, and shall arrest and prosecute any person found selling, exposing or offering for sale any milk in violation of this ordinance.

SEC. 13. The said inspector may have test made of milk samples for fat, adulteration by water or any solid or liquid, for preservatives, or bacterial content, or the bacterial content of water used for cleansing milk utensils, by sending samples to the Director of the Experiment Station at Manhattan, Kansas, with description of test desired. The test will be made by a duly qualified person. The results of such test shall be taken as correct.

SEC. 14. *Penalties.*—Any persons violating any part of this ordinance shall be guilty of misdemeanor and be liable to a fine not exceeding one hundred dollars or to imprisonment not exceeding one hundred days, and upon conviction thereof shall forfeit his or her license.

SEC. 15. This ordinance shall take effect and be in force from and after its publication once in the official paper of ———.

DAVID M. WILSON, *State Dairy Commissioner.*

Harrowing Wheat.

We have not carried on extensive experiments in harrowing wheat at this Station. For the last three years we have harrowed a field of wheat each spring, but have not made a yields test. From observation there seemed to be little or no effect on the growth or yield of the wheat, but the last three seasons have really been too wet for the best development of wheat. The har-

rowing is essentially for the purpose of conserving soil moisture. In a drier season we may expect more beneficial results. We have not observed that the harrowing injured the wheat. Our plan has been to harrow once or twice in the spring, after the wheat has started well. It is not usually advisable to harrow wheat in the fall, and it is not best to harrow too early in the spring, but when the wheat has made some start and the roots of the plants are well established wheat may be harrowed without injury and often doubtless with much benefit. The harrowing will not only loosen the soil, producing a mulch which tends to conserve the soil moisture, also producing a favorable surface for receiving rain, but the harrowing also destroys the young weeds and gives a cleaner crop of wheat than may be secured without harrowing, especially if the soil is inclined to be weedy.

Mr. W. H. Campbell, in his "Campbell's Method of Soil Culture," recommends harrowing the wheat, beginning in the spring and continuing the harrowing until the wheat is a foot or eighteen inches high. In the dry climate of the semi-arid regions, doubtless the harrowing and the continuing of the harrowing during the early growth of the wheat may often prove beneficial in conserving soil moisture and producing larger yields of wheat than may be secured without the cultivation.

The weed harrow or weeder is perhaps better adapted for harrowing wheat than the common straight-tooth or slanting-tooth harrow. The weeder is somewhat objectionable on account of the wheels. When the ground is reasonably firm, the common harrow may be used without injuring the wheat. We question whether it is necessary to continue the harrowing after the wheat covers the ground well, unless very heavy rains firm and puddle the soil, destroying the mulch of mellow soil. Usually this will not occur. We have harrowed wheat when it stood five or six inches high and had stooled so as to about cover the ground, and the mulch this produced was still in evidence at harvest time. In this experiment the ground was harrowed twice on the same day. The yield of wheat from the harrowed field was three bushels per acre, on the average, higher than that from the field adjacent not harrowed. The wheat on the harrowed field ripened about two days later than the wheat on the check plot. This experiment was carried on at the North Dakota Experiment Station with spring wheat. It was observed in the same experiment that wheat harrowed before it had stooled much was injured in stand and gave a less yield of grain than the wheat not harrowed. It

appears, therefore, that even with winter wheat there may be some danger of injuring the wheat if harrowed too early in the spring.

A. M. TENEYCK.

K. S. A. C. Electricals Organize.

The junior and senior electrical engineers of the Kansas State Agricultural College have recently succeeded in organizing a branch of the American Institute of Electrical Engineers, to be known as the Kansas Agricultural College Branch.

The institute is the national organization of the electrical engineers of this country, founded for the advancement of the theory and practice of electrical engineering. Its recommendations and decisions very largely determine the standard of engineering practice. At its regular monthly meetings are presented papers describing the results of the researches carried on by its members.

The home of the institute is in New York City. For the benefit of engineers at a distance, sections of the institute are organized in the larger cities and the "branches," under the supervision of a member of the institute as secretary, are established in the more important engineering colleges for the encouragement of the students who expect to become engineers.

The members of the branches receive monthly the proceedings of the institute, and are in this way kept informed concerning the advances of their profession. The branch meetings are devoted to discussions of original papers presented by the members and visiting engineers, and the papers presented at the New York meetings.

The Kansas State Agricultural College branch has a membership of more than twenty. They meet on the first Tuesday evening of each month. Mr. W. L. Enfield is chairman and Mr. K. H. Logan secretary, representing the institute.

Oregon Stockgrowers Plan War On Wolves and Coyotes.

The offering of bounties for the scalps of predatory animals has so often failed to accomplish the good hoped for that the bounty plan has lost favor in many localities. The Wool Growers' Association of Oregon has just gone on record at its recent meeting at The Dalles as favoring the abandonment of the bounty system and substituting the system of killing the animals by private effort and employment of professional hunters. The association will take up the work and ask assistance from the National Association.

J. N. Burgess, president of the association, estimates that Oregon sheep owners lost the past year $250,000 by predatory animals, and that the loss of other farm stock, including poultry, would increase the loss to half a million dollars.

The United States Forest Service has demonstrated that efficient work can be done by trained hunters who are sent to the ranges to make a special business of killing wolves, and such other denizens of the forests as prey on flocks of sheep. A number of such hunters are now at work, and are ridding some of the ranges very rapidly of the animals which do so much damage each year. Wolves are tracked to their dens, the pick and shovel as well as the rifle are brought into play, and the young are found and destroyed. A campaign of that kind strikes at the root of the evil.

So vast, however, is the western country that the work of a few hunters can give only local relief; but if State Stock Growers' Associations go at it in earnest, as Oregon organizations propose, the war will soon grow decidedly interesting for the four-footed skulkers that have grown fat on mutton, pork, veal, and poultry.

The Agronomy Department has recently sent nine samples of Kansas corn to India, per the request of the director of the Bombay Presidency. An assortment of Kansas grains has just been shipped to the Russian Experiment Station under direction of Dr. C. W. Burkett, Director of the Experiment Station. This is the second shipment of seeds which the Agronomy Department has made to Russia, the first being shipped a year ago. Smaller lots of seed grains have been sent to other foreign countries—Australia and South America. The department has also distributed samples of seed grains to many of the states of the United States. It appears that Kansas has not only attracted the attention of other states to its improved seed grains, but its reputation is becoming world-wide.

The Department of Agronomy had finished seeding early spring grains by about the middle of March. Most of the grain had sprouted and the heavy freezing of April first and second appears to have injured the newly sprouted grain to some extent, although it is not likely that it will have to be reseeded. The freezes do not appear to have injured alfalfa much, and winter wheat and other winter grains are not at all injured.

The Horticultural Department has had a very busy week filling orders for trees. A large consignment was sent to Hays Experiment Station, which included two thousand Catalpa Speciosa.

Local Notes.

The foundry made a "run" Saturday.

The Board of Regents will meet next Monday.

The Heat and Power Department had a break-down last Monday.

Professor Kendall has an article in the last *Mail and Breeze* on "Cream Testing in Kansas."

The Horticultural Department is "top dressing" the grounds to the south and west of the new Horticulture Hall.

Professor Kinzer has been elected president of the Manhattan Fair Association. The fair will be held September 29 to October 2.

At a meeting of the Athletic Association last Tuesday, A. J. Ostlund was elected track manager to succeed H. A. McLenon, resigned.

The Horticultural Department experimented with oil as a smoke material for saving fruit buds during the cold nights of last week.

The Department of Physical Training is preparing to give an exhibition in the Women's Gymnasium to invited parties some time in the latter part of April.

The registration for the spring election in Manhattan reaches 1431. As there is not the least excitement about the tickets, the number is indicative of considerable growth during the past years.

A threatened attack of pneumonia has kept Assistant Ahearn confined to his house this week. We are glad to say, however, that he is much better, and expects to meet his classes next week.

Edison Kubin, junior vet., spent the time between terms at Holyrood, Kan., applying his knowledge in veterinary science and incidentally looking over the ground for a location after he obtains his D. V. M.—*Herald.*

Professor Kendall will soon receive his new refrigerator plant. It will be stationed in the basement of Dairy Hall and will supply the creamery, the Horticultural and the Domestic Science Departments with ice and "temperature."

Mrs. B. L. Remick and Mrs. J. T. Willard gave an informal reception Saturday afternoon at the Remick home in honor of Mrs. B. S. McFarland, of Olathe, who had spent a few weeks with her old friends in Manhattan. Mrs. McFarland returned to her home on Monday.

During the past few weeks Mr. C. C. Cunningham and Assistant Schafer have been selecting and preparing the breeding ears of corn, Kafir-corn and sorghum for this year's planting. This is very interesting work, but requires a great deal of time and careful study. The breeding plots of earlier spring grains—oats, barley, and emmer—have already been planted.

The White Sox, of Topeka, and the Agricultural College nine played a game on the Manhattan field last Tuesday, resulting in a victory for the "Sox." The game stood 9 to 3.

The Horticultural Department recently sold 500 catalpa trees to Mr. Jennison, a student here, who will set them out in Western Kansas. The catalpa trees were the best variety the department has had, and the supply is exhausted.—*Herald.*

Instructor Theo. Scheffer's bulletin on Pocket-Gophers is meeting with much approval. The *Drovers' Telegram* published the full text of the press bulletin and the *Pacific Rural Press* of recent date contained a synopsis of it. The regular station bulletin will be received from the state printer soon.

The Y. M. C. A. officers recently elected are: President, J. S. Daniels; vice-president, A. F. Barry; secretary, A. J. Ostlund; treasurer, Russel Lawrence. The new building is to be thrown open as soon as the furnishings are in place. These were purchased in Kansas City the first of the week by a committee consisting of Sec. Wm. Davis, Professor Hamilton, and Doctor Crise.

Thorough cultivation of the soil, looking to the storing and conservation of soil moisture, promises to pay well for the extra work this season. The seed-bed in which the soil is well settled and in which the moisture has been well conserved has given the grain a strong start, while in the dry, loose seed-bed, secured by late plowing or spring plowing with little or no cultivation, the grain is starting poorly if at all.

The sketches for the new Engineering Hall are now in the hands of State Architect Stanton, who intends to complete the drawings and specifications inside of six weeks. Contracts for the building will probably be awarded at or before the Commencement session of the Board of Regents. The building will be located south of the power-house and west of the Women's Gymnasium, and will furnish a permanent home for the Departments of Engineering.

E. Guerrant Kelley, government entomologist stationed at the College, returned Friday of last week from a trip through Texas. He had been hunting "green bugs," but had not found any. He was all over Texas and stopped at several places in Oklahoma and in southern Kansas, but found no "green bugs" in numbers sufficient to damage the wheat. He did find, however, the Hessian fly in quantities sufficient to cause wheat growers considerable concern. From Great Bend south to the State line, Mr. Kelley says that in every field examined he found wheat infested with the fly. He declined to make any prophecies as to what this condition might lead to, but said that one fly can kill a plant. In several places in the southern part of the State Mr. Kelley left Hessian fly parasites. These parasites are expected to breed rapidly. They have been known to wipe out the fly in other parts of the country, but the trouble is that they will not get in their work until after the fly has had time to ruin the wheat.

We hope that the rumor that many of the early peach buds were frozen this week is not true. We want some Kansas peaches this summer.

Several changes have been made in the baseball schedule since its publication in the INDUSTRIALIST. Baker University has been added for April 10. Nebraska State University was compelled to cancel their game with us. Other changes will probably be made.

The Horticultural Department is busy these cold nights testing the efficacy of the various methods recommended for the protection of the orchards from frost. The department is in correspondence with other stations doing experimental work along the same line, and hope to secure some valuable data from the work.

The banks of the Smoky Hill river in Western Kansas, not a great distance from the Colorado line, have yielded to the University of Chicago the most perfect specimen of the fossil remains of the *platecarpus abruptus* on exhibition anywhere in the world, and it may be said with pride the discoverer of the carpus was an M. Sc. of this College, namely, Prof. S. W. Williston, now of the University of Chicago. The fish lived and thrived about six million years ago. This fossil, which is now on exhibition in the museum of paleontology of that institution, is regarded as one of the most valuable possessions of the school. The professor found the specimen in the chalk beds of the Smoky Hill last summer and quietly communicated his find to the university and waited for a chance to dig the monster bones from their ancient grave. According to Professor Williston, his rare animal was the terror of the great and small dwellers of the seas in the Cretaceous age. It was covered with strips and bars of many brilliant colors and wasn't a bad looking sort of a chap, as prehistoric animals go. Among other accomplishments the *platecarpus abruptus* was able to swallow hundreds of small and large fish at a gulp, and he had an extra set of teeth for holding his prey, after the fashion of snakes. The monster has been mounted in plaster of paris by the university preparator. It has 112 vertebræ, is nineteen feet long, and possesses paddle-like feet with which it walked the land and swam the seas with equal facility. Its finding in Kansas leads to a conclusion, that the Sunflower State was once not so dry as under present atmospheric conditions and statutes.

Alumni and Former Students.

H. A. Darnell, '92, is now editor and manager of the *Beaver State Herald*, published at Gresham, Ore. The issue for March 20 is the first one under his editorship and contains a forceful and sensible foreword.

Prof. E. F. Nichols ['88], of Columbia University, delivered a lecture before the Society of Sigma Xi, at Yale University, on March 9. The subject was "The Pressure Due to Light and Its Consequences," and the lecturer introduced a number of experiments as illustrations.—*Science.*

Board of Instruction (concluded).

JACOB LUND, M. S. (K. S. A. C.) ..... Superintendent Heat and Power Department
JOHN H. MILLER, A. M. ..... Superintendent Farmers' Institutes
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.) ..... Secretary
CLARENCE L. BARNES, D. V. M. (Cornell) ..... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B. S. (Chicago) ..... Assistant Professor of Physics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.) ..... Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard) ..... Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.) ..... Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.) ..... Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K.S.A. C.) ..... Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago) ..... Assistant Professor of Mathematics

---

Miss Ada Rice, B. S. (K. S. A. C.) ..... Instructor in English
Miss Ella Weeks, A. B. (U. of K.) ..... Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount) ..... Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University) ..... Instructor in Veterinary Science
Robert E. Eastman, M. S. (Cornell University) ..... Instructor in Horticulture
Miss Ula M. Dow, B. S. (K. S. A. C.) ..... Instructor in Domestic Science
Theo. H. Scheffer, A. M. (Cornell University) ..... Instructor in Zoölogy
Herbert H. King, M. A. (Ewing College) ..... Instructor in Chemistry
John B. Whelan, B. S. (Nebraska) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Miss Gertrude Barnes ..... Assistant Librarian
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.) ..... Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.) ..... Foreman of Foundry
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C) ..... Assistant in Printing
Roy A. Seaton, B. S. (K. S. A. C.) ..... Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College) ..... Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale) ..... Assistant in Architecture and Drawing
Chas. Yost ..... Assistant in Heat and Power Department
Earle B. Milliard ..... Foreman of Blacksmithing
J. T. Parker, ... Assistant in Woodwork
J. D. Magee, A. M. (Chicago) ..... Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit) ..... Assistant in German
Miss Florence S. Latimer, B M. (Ferry Hall Seminary) ..... Assistant in Music
Miss Marjorie Russell (Mechanics' Institute) ..... Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.) ..... Assistant in Botany
Burton Rogers, D. V. M. (Iowa State College) ..... Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal) ..... Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.) ..... Assistant Chemist, Experiment Station
Edw. C. Crowley, Ph. B. (Yale) ..... Assistant in Chemistry
Hugh Oliver ..... Assistant in Heat and Power Department
Miss Charlaine Furley, B. A. (Fairmount) ..... Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (U. of K.) ..... Assistant in Preparatory Department
Leland E. Call, B. S. (Ohio State University) ..... Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University) ..... Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.) ..... Assistant in English
William C. Lane, B. S. (K. S. A. C.) ..... Assistant in Physics
Louis H. Beall, A. B. (Denison) ..... Assistant in English
Miss Flora C. Knight, A. B. (Uni. of Wyoming) ..... Assistant in English
Miss Grace H. Woodward (Boston School of D. S.) ..... Assistant in Domestic Science
Miss Nellie Cave ..... Assistant in Music
Miss Anna I. McKirahan ..... Assistant in Music
Miss Margaret Mack (K. S. N.) ..... Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.) ..... Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.) ..... Assistant in Botany
Charles E. Bassler, D. V. M. (K. S. A. C.) ..... Assistant in Veterinary Science
Miss Mary W. Hancock (Mechanics' Inst.) ..... Assistant in Domestic Art
S. W. McGarrah, A. M. (Grove City College) ..... Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.) ..... Assistant in Animal Husbandry
Arthur L. Peck, B. S. (Mass. Ag. Coll.) ..... Assistant in Horticulture
Kirk H. Logan, B. S. (U. of K.) ..... Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College) ..... Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University) ..... Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College) ..... Assistant in Preparatory Department
Loren Clark ..... Assistant in Printing
Miss Bertha M. Johnston (Simmons College) ..... Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.) ..... Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University) ..... Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.) ..... Assistant in Agronomy
Earle Brintnall, B. S. (Iowa State College) ..... Assistant in Dairy Husbandry
William Neill ..... Dairy Herdsman
G. A. Porteous ..... Herdsman
Wm. A. Lamb ..... Poultryman
Floyd Howard ..... Farm Foreman
William R. Lewis ..... Custodian

THE INDUSTRIALIST

Historical Society

Vol. 34 **No. 27**

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

The Industrialist.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

TERMS AND VACATIONS.

FALL TERM, 1907, THIRTEEN WEEKS.

Thursday, Friday, and Saturday, November 28, 29, and 30.....Thanksgiving vacation
Thursday and Friday, December 19, 20.....Examination at close of term

WINTER TERM, 1908, TWELVE WEEKS.

Monday, January 6.....Examination for admission, at nine A. M.
Tuesday, January 7.....Winter term begins
Tuesday, January 7.....Short courses in agriculture and dairying begin
Saturday, February 1.....Annual intersociety oratorical contest
Saturday, February 15.....Mid-term examination
Thursday, March 19.....Annual concert
Thursday and Friday, March 26, 27.....Examination at close of term

SPRING TERM, 1908, ELEVEN WEEKS.

Monday, March 30.....Examination for admission, at nine A. M.
Tuesday, March 31.....Spring term begins
Saturday, May 9.....Mid-term examination
Tuesday, May 19.....Beginning of summer course in domestic science
Tuesday and Wednesday, June 16, 17.....Examination at close of year
June 14 to 18.....Exercises of Commencement week
Thursday, June 18, at ten A.M.....Commencement
June 19 to September 16.....Summer vacation

FALL TERM, 1908,

Wednesday, September 16.....Examination for admission, at nine A. M.
Thursday, September 17.....College year begins

BOARD OF REGENTS.

HON. A. M. STORY, President.....Manhattan
HON. J. O. TULLOSS ['99], Vice-President.....Sedan
HON. J. S. MCDOWELL.....Smith Center
HON. GEO. P. GRIFFITH.....Hays
HON. EDWIN TAYLOR.....Edwardsville
HON. W. E. BLACKBURN.....Anthony
PRES. E. R. NICHOLS, Secretary *ex-officio*.....Manhattan

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
CHARLES WM. BURKETT, M. Sc. (Ohio State University).....Director Experiment Station
JOHN D. WALTERS, M. S. (K. S. A. C.).....Professor of Architecture and Drawing
JULIUS T. WILLARD, M. S. (K. S. A. C.).....Professor of Chemistry, Vice-Director Exp. Station
BENJ. L. REMICK, Ph.M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B. S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M. S. (K. S. A. C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph.M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M. S. (K. S. A. C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph.D. (Univ. of City of New York).....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B. S. (K. S. A. C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College).....Professor of Economics
JOHN V. CORTELYOU, A.M. (Uni. of Neb.), Ph.D. (Heidelberg).....Professor of German
OLOF VALLEY, B. M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D.V.S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B. S. A. (Iowa State College).....Professor of Animal Husbandry
WALTER E. KING, M. S. (Cornell).....Professor of Bacteriology
THOMAS J. HEADLEE, Ph.D. (Cornell).....Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U. S. A.....Professor of Military Science
JOHN C. KENDALL, B. S. (N. H. A. & M.).....Professor of Dairy Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art
MISS ANNE M. BOYD, A.B., Lib. Sci. (Millikin).....Librarian
ROBERT J. BARNETT, B. S. (K. S. A. C.).....Principal Preparatory Department

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., APR. 11, 1908. No. 27

A Great Need for Saving Soil Moisture this Spring.

(Press Bulletin No. 160.)

There is no question but that the moisture condition of the soil at the beginning of the growing season is often closely related to the yield of crops for that year. Experiment Station men have observed this and have advocated winter and spring culture of the soil, such as may aid in storing up and conserving soil moisture. Practical farmers have observed this, also, in the poor growth of corn and other crops on spring breaking or on sod land, and by the low yield of crops following Kafir-corn and sorghum, which crops grow late in the fall and as a rule exhaust the soil water to such a degree that the supply is not replenished for the following spring crops.

While the moisture condition of the soil in the spring may be taken as a general criterion of crop yields for the season, there, of course, will be exceptions. For instance, an exceptionally wet summer may follow a winter unfavorable for the storing up of water in the soil, or an exceedingly dry summer may follow a winter favorable for the storing up of moisture. While these exceptions may occur, at the same time it holds true that crops will make a fair yield in a dry season if an abundance of water has been stored in the soil, or will make a poor yield in a season of average rainfall if the moisture content at the beginning of the season is low. In order to secure data on this subject the Agronomy Department of the Kansas Experiment Station, in 1903, began a study of the moisture condition of the soil under different crops at the beginning of the growing season, and has continued the work since that time. The following table gives the moisture condition of the soil in March, 1907 and 1908, to a depth of six feet, in ground in alfalfa, grass (sod), and wheat, and in corn ground which had been fall plowed in preparation for planting corn again.

A glance at this table will show the contrast in the amount of stored moisture in the soil this spring as compared with last season at this time. The moisture content in six feet of soil is less in every case as follows: In alfalfa ground, 5.89 inches, which is equiva-

INCHES OF WATER IN FIRST SIX FEET OF SOIL.

Depth.	Mar. 23, '07.	Mar. 27, '08.	Difference.
Alfalfa (seeded in 1904).			
First foot	3.69	1.98	1.71
Second foot	3.64	2.02	1.62
Third foot	2.86	2.03	.83
Fourth foot	2.67	2.17	.50
Fifth foot	2.42	1.79	.63
Sixth foot	2.27	1.67	.60
Totals	17.55	11.66	5.89
Sod (*Bromus inermis* seeded in 1903).			
First foot	3.90	2.67	1.23
Second foot	3.88	2.91	.97
Third foot	3.61	1.99	1.62
Fourth foot	2.57	2.12	.45
Fifth foot	2.09	1.84	.25
Sixth foot	1.61	1.64	— .03
Totals	17.66	13.17	4.49
Wheat (fall seeded).			
First foot	3.45	2.04	1.41
Second foot	3.71	3.02	.69
Third foot	3.70	3.15	.55
Fourth foot	4.00	2.93	1.07
Fifth foot	3.67	2.23	1.44
Sixth foot	3.15	1.81	1.34
Totals	21.68	15.18	6.50
Corn Ground.			
First foot	4.25	3.43	.82
Second foot	4.28	4.08	.20
Third foot	4.32	2.86	1.46
Fourth foot	3.74	2.46	1.28
Fifth foot	2.97	2.57	.40
Sixth foot	3.00	2.71	.29
Totals	22.56	18.11	4.45

lent to 668 tons of water per acre; in sod ground, 4.49 inches, or 500 tons per acre; in fall-plowed corn ground, 4.45 inches, or 508½ tons per acre; while in wheat ground, which seems to be comparatively in the greatest need of water, there is 6.5 inches, or 732 tons, less water per acre than was stored in the soil for the use of the crop at that date in 1907. Also, that this difference in soil moisture extends deeper than the surface soil is evidenced by the drying up of the shallower wells in the vicinity of Manhattan.

When we appreciate the fact that an inch of water stored in the soil is said to be equivalent to two inches of rainfall, and some investigators say three inches of rainfall, we begin to appreciate what a deficiency of 6½ inches of water in the surface six feet of soil means. It means 13 inches of rainfall, or over one-third of the total average rainfall at this Station for the year. That the spring of 1907 was dry we well remember, and the moisture stored in the soil on March 23, 1907, was below the average. Crops at this station suffered last season from an insufficient supply of moisture.

Perhaps the spring of 1905 presents what would be considered more nearly an average for the moisture content of the soil for the spring of the year. During the six winter months from October, 1904, to March, 1905, inclusive, there was 7.27 inches of rainfall, or about .25 of an inch less than normal for the six winter months. The soil on the first of April, 1905, was recorded as in excellent condition, and both soil and weather conditions were favorable for seeding. Moisture samples taken on April 7, 1905, in fall-plowed corn ground showed 28.39 inches of water in the surface six feet of soil as against 18.11 inches this season, a difference of 10.28 inches. In sod land there was 21.7 inches of water in 1905, as against 13.17 inches this spring, a difference of 8.53 inches. In wheat ground there was 25.86 inches of water in 1905 and 15.18 inches this spring, a difference of 10.68 inches, which, according to Professor King, of Wisconsin, is sufficient water to produce thirty-five bushels of wheat per acre.

It is evident from these figures that unless the rainfall for the spring months exceeds the average there will be a shortage in the yield of winter and spring grains, alfalfa, and pasture. The yield of corn, which also depends upon the spring rains, is influenced quite as much by the rains of early summer. Thus every effort should be made to put the ground in the best possible condition for absorbing the rainfall and conserving the moisture already in the ground. The preparation of the ground for corn should have been started three weeks ago, but even yet much moisture may be saved between this and planting time by disking the corn ground or, better yet, by listing. The early listing puts the ground in the best possible condition for receiving the greatest amount of rainfall, and at the same time the stirring of the soil forms a soil mulch for the conservation of moisture already stored in the soil. The corn can be planted in the early listed ground by listing in the old furrow or by splitting the ridges. After the corn is planted every effort should be made to prevent the growth of weeds, for from present indications every ounce of water wasted from the soil through weeds means a decrease in the yield of corn.

It is during seasons of this kind that the storing of a few extra inches of moisture in the ground decides between a crop and a partial or total failure. Knowing the condition the farmers should take every precaution to store up and conserve the much-needed supply of soil moisture. L. E. CALL, *Assistant Agronomist.*

NOTE.—A circular on "Dry Land Farming," written by Prof. A. M. TenEyck, may be obtained by request from the Farmers' Institute Department, Kansas State Agricultural College, Manhattan, Kansas.

Cement Paving for Streets.

The following letter from the civil engineering department of the city of Richmond, Ind., received lately, will be read with interest by all who are investigating the constantly growing problem of street paving. Of late there has been much talk about cement concrete, and there are many who are growing more and more convinced that this material will not only give us the best of sidewalks but produce the best of road-beds—cheaper, more durable, less dusty and more hygienic than asphalt, brick, cedar blocks, or cobblestone. Several of the large seaport cities of Germany and Holland have used cement for this purpose for many years and report very satisfactory qualities of such road-beds. A number of cities along the Atlantic have used it with equally good results. Grand Rapids, Mich., has built many cement streets, and to judge from the photographs received by the Department of Architecture these streets are in excellent condition. However, it must be conceded that the method is new and requires careful study to avoid costly mistakes. The letter referred to is as follows:

"The concrete pavements at Richmond have attracted considerable attention, and in answer to numerous inquiries and as a matter of general interest I have to-day made thorough examination of these pavements and find condition as follows: First, I may give some data as to time of construction, cost, nature of traffic, etc. The alley adjacent to Westcott hotel was put down in 1896, thus having been down about eleven years. Owing to a settlement of gravel around the foundation of the hotel, the pavement has settled slightly in places, but this settlement which would be disastrous to almost any other kind of pavement has only resulted in a slight unevenness of the blocks, and otherwise the pavement shows almost no sign of wear; although being a narrow alley it carries a large amount of traffic concentrated in a small space. The cost at the time was 18 cents per square foot. In 1901 two other important alleys carrying large traffic were paved. In 1903 Sailor street was paved at a cost of 14½ cents per square foot. This street is in almost perfect condition. Last fall it was necessary to cut a trench through this pavement to lay underground telephone conduits, and it was with the utmost difficulty that the concrete could be broken. After laying the conduit the pavement was very carefully repaired, and seems as good as new.

"In 1903 a very busy intersection at Seventh and North A streets was paved with concrete at a cost of 16½ cents per square foot, and in 1904 Elm Place, at a cost of 13 cents. The latter

street is adjacent to a hotel and some wholesale establishments, and over it is done some very heavy hauling, especially from the hardware and iron storage house of Jones Bros., wholesale and retail dealers in hardware. These pavements show a little chipping at the edges of the joints, left for contraction and expansion, and have an occasional temperature crack, but none of these cause any serious detriment. Otherwise the pavements show almost no signs of wear, and will apparently last for years to come, with no repairs or maintenance charges. In addition to those mentioned we have a number of other alleys paved with concrete, and during last season on alleys and streets we put down 3500 square yards. Our citizens are very well satisfied with this pavement. It is very easily cleaned, and thus is first class from an æsthetic and sanitary point of view. It is low in first cost, compared to brick, asphalt, or bitulithic. Cost for repairs and maintenance will be nothing for a great many years, and life of the pavements will apparently be far greater than any of those mentioned.

"It is a little slippery for horses, but not more so than brick and considerably less so than asphalt. Considering it from all points, we recognize this form of pavement a success."

J. D. WALTERS.

Cattle Feeding at Hays Branch Experiment Station.

Last summer the State Experiment Station authorities outlined a new policy in experiments with cattle at the Fort Hays Station, the plans for which required graded stock of definite age and breed. It was therefore determined to dispose of the herd of 130 cattle, grown from the few head of cows purchased in 1903, and all but 40 head were sold to local buyers in early fall. The 40 head retained were cows and heifers, of the Shorthorn and Hereford breeds, the purpose of their retention being to conduct a feeding experiment to demonstrate the comparative ability of cattle of various ages to produce beef, on a ration composed of corn-and-cob meal, Kafir-corn meal, alfalfa and Kafir-corn stover, so proportioned that the ration would be as nearly balanced as was possible.

In the bunch there were 10 cows 5 to 9 years old, 10 three-year-old heifers, 10 two-year-old heifers, and 10 coming yearlings, also heifers. The cattle of same age were placed in a lot to themselves, thus making up four lots of ten head each. Each lot received the same ration, only the quantity varying according to feeding ability of the several lots.

The feed was all raised on the Station farm. Corn was ground

with the cob. Kafir-corn grain ground, alfalfa fed from baled stock, and the Kafir-corn stover in bundles from the 160-acre field of this crop grown in 1907. Feeding commenced November 11, at which date the cattle were separately weighed and their individual weights recorded. Weights were likewise taken each four weeks, so that the gains could be noted.

First rations fed contained only small quantities of grain and greater amounts of roughage, which difference was gradually reversed so that toward the close of the experiment the stock was receiving heavier grain rations and a little less roughage than at the beginning. The feeding continued for 85 days, after which period the stock was shipped to Kansas City and marketed. Here follows some of the results:

When put in the feed lot, the ten cows weighed 10,483 pounds. In the 85 days, each cow gained an average of 2.18 pounds daily, or the entire lot gained 1857 pounds for the period. They brought $4.15 on the market.

The ten three-year-olds averaged 869 pounds each when feeding began, and 1082 pounds each when it closed, making an average daily gain of 2.78 pounds each, or a total of 2127 pounds for the lot. These brought the highest price of the four lots, $4.90.

The two-year-old heifers averaged 687 pounds at the beginning of the period, and 870 pounds when feeding concluded. Each heifer gained an average of 2.14 pounds daily, and the entire lot was 1824 pounds heavier than at the commencement of the feeding. This bunch brought $4.85.

The calves, or "baby beef," weighed 421 pounds each when put into the feed lot, and 575 pounds each when sold, making daily average gain of 1.80 pounds each, and 1535 pounds for the lot. Brought $4.50 on market.

Swift & Co. butchered the stock, making a separate test of each lot. Their head beef man reported the cows to dress out a very good quality for their kind; the three-year-olds to be choice beef; the two-year-olds also choice and appearing better when dressed than any of the other lots, while the calves were choice stock for their weights.

From the foregoing it will be noted that the three-year-old heifers made best gains and received highest price, while the two-year-olds gained nearly as much as the cows, with the added advantage of selling for more money per pound. The cattle consumed 321 bushels of corn, 434 bushels of Kafir-corn, 17 tons of alfalfa, and 9¼ tons of Kafir stover. The three-year-olds produced more beef than did the cows, and on considerably less grain, and the two-

year-olds made a better gain than the cows proportionate to the quantity of grain consumed. As between the three-year-olds and the two-year-olds, there seems very little difference. The former consumed 1250 pounds more grain and made 300 pounds more beef than did the latter, but this may be readily accounted for by difference in age and natural food requirements. The calves made a good return for their class.

Such work as this demonstrates the practicability of beef growing and feeding at home for the western farmer; and that crops suitable for beef rations can be grown with reasonable certainty in many localities of that part of the State. The benefit to the farmer, and the farm, accruing from the handling of live stock has been established beyond the shadow of a doubt.

Some Things a Dairy Farmer Ought to Know.

Not only the farmers engaged in dairying as a business, but even those that sell or trade a few pounds of butter to the grocer, should be familiar with market requirements. The markets are vastly different in their demands from what they were a few years ago. I remember the time when all those that had anything to do with butter making considered it impossible to make butter from other than sour cream. This practice educated us to the flavor produced in butter from sour cream. Even yet there is a fair demand for butter of quick, high flavor, but the best trade is asking for something different, and they are willing to pay the difference in price for it.

The butter that will bring the highest price anywhere in the United States is the butter of strictly sweet, mild, clean flavor, as nearly like that of clean-flavored new milk as possible. This butter can only be produced from cream that is sweet and clean in flavor when delivered to the creamery. We should aim to suit the taste of the consumer. I trust that each producer will ask himself whether he is doing this, or keeping the cream until it becomes sour, and thereby fitting it for the poorer market and lowering the price.

A word to those making butter on the farm: Churn the cream when you can tell by the taste that it is beginning to sour. Have the cream at the churning temperature at least two and one-half hours before churning. Find the temperature that will cause the cream to churn in twenty-five to thirty minutes. Stop churning while the butter is in granules of the size of peas or grains of wheat. Draw off the buttermilk and add as much water as you have buttermilk, at a temperature of from 54 to 56 degrees F.

Agitate the butter granules in the water for three or four minutes, then draw off the water. If the butter is not clear in color and free from milkiness, repeat the wash. Salt the butter in the granular form, then mix and leave two hours before working. Put up in neat one-pound packages, wrapped in parchment paper, neatly boxed or put into baskets.

If the above suggestions are followed by those that make butter on the farm there will be fewer car-loads of butter sold at from ten to twelve cents a pound by the grocers of this State for renovating.

D. M. WILSON,
Kansas State Dairy Commissioner.

Pensions for Old Professors.

We read in the daily papers that the old millionaire and philanthropist of Pittsburg has once more shaken his ever full cornucopia, this time for the benefit of old and worn-out educators and scientists in state institutions. Announcement is made that Andrew Carnegie has added $5,000,000 to the fund of the Carnegie foundation, or whatever sum may be necessary, to include as pension beneficiaries eligible professors of state institutions.

No provision was made for this class of educators in the original gift made about three years ago, for the reason stated by Mr. Carnegie at the time that the donor thought it possible that such institutions might prefer that their relations should continue exclusively with the state from which their chief support was derived. This view was not taken by the national association of state universities, which in the year following the establishment of the foundation petitioned the trustees for admittance to the benefits of the retiring allowance system. It was then found that the earnings of the original fund of $10,000,000 were exhausted through the outlet already planned, and that if the faculties of all state institutions were to be benefited an additional $5,000,000 would be required. The situation was placed formally before Mr. Carnegie by Dr. Henry S. Pritchett, president of the Carnegie foundation for the advancement of teaching, on March 31 last, and on that day Mr. Carnegie replied that the money would be forthcoming for any state institution whose application received the approval of the legislature and governor of its states. The additional donation will be in five per cent bonds, providing an added annual income of a quarter of a million dollars and a total of yearly disbursements of $750,000.

The founder of these pensions does not wish to have them considered as charities, but most positively as a means of raising the

standard of higher education, first by retaining good men in the ranks of the teaching profession by placing before them the certainty of a decent living in old age; second, by retiring worn-out professors and replacing these with younger men; and third, by raising the standard of the higher institutions themselves, the latter to be done by refusing pensions to institutions below a certain rank. It is possible, too, that Mr. Carnegie had still other effects in view. By refusing to recognize all sectarian colleges he may have planned their gradual elimination. It certainly will have the influence of broadening the organic laws and charters of many of the denominational institutions.

The rules published by the committee provide for pensions to professors of over sixty-five years of age who have taught classes of College rank for at least fifteen years. The minimum amount of the pension has been fixed at $800 per year, and provision has been made for giving the widow of a pensioned professor half of this amount. The average retiring allowance which the foundation is paying amounts to $1450. During the year ending September 30, 1907, the total amount paid out for pensions was $158,890.27, and the accumulation of interest on the $10,000,000 of the original grant was $445,234.20.

The question which the older members of the Faculty of the Kansas State Agricultural College and of the faculties of all the land-grant colleges in the United States ask is: Are the teachers of these institutions included among the beneficiaries of the gift of Mr. Carnegie? The answer can not be positively given. In order to become legible to receive the pension benefit an institution must do work of College rank, which means that it must give professional courses of the usual four-years duration; that its entrance requirements must cover four years of high-school work, and that at least six members of its faculty must give all their time to professional teaching or the teaching of branches above high-school grade. With some of these requirements this College can comply. With others it can not comply as yet.

J. D. WALTERS.

How Kansas weather loves to mock the wisdom of men. A. M. TenEyck, who knows all about making two ears of corn grow where one grew before, thought and taught and finally gave it out as his opinion that this would be an exceptionally dry spring. And before the prophecy had had time to become thoroughly circulated along came a two-inch rain.—*Mercury.*

Local Notes.

Sumner county has sent in the banner "corn contest" list so far—an even five hundred.

The seniors conducted chapel exercises this morning. The class occupied the rostrum.

The Board of Regents met in adjourned session Monday, Tuesday and Wednesday of this week.

"The Taming of the Shrew" will be given by the College Dramatic Club in the Auditorium on Monday evening, April 20.

The new four-year course in printing, adopted at the last session of the Board, will be published in the INDUSTRIALIST soon.

The Farmers' Institute and Extension office has sent out, since July, 12,597 two-cent letters, 16,663 one-cent letters, over 110,000 pamphlets.

The baseball game between the College team and the St. Mary's nine last Wednesday afternoon in the Manhattan Athletic Park resulted in a stand-off, each team scoring two points.

There will be a meeting of farmers at Riley, Saturday, April 18, for the purpose of organizing an institute. Professor Kendall and Superintendent Miller will be present and make addresses.

During the spring term the College battalion will drill four days a week. Dress parade will be held Thursdays. The band will play Tuesdays as well as Thursdays. The drill hour is from 2:50 to 3:45 P. M.

Dr. E. L. Richards, D. V. M., of Parsons, Kan., was a visitor at the College Friday of last week. The doctor, a graduate of Ontario University, was especially interested in the work of the Veterinary Science Department.

The farmers' institute officers in Bourbon county, not content with enlisting two hundred boys in the corn contest, have succeeded in getting over three hundred farmers to enter a contest, open only to men over twenty-one years of age.

During the spring term the Faculty lunches will be served by the junior girls in domestic science. One-half the class will have charge of that work this month, while the other half will have practice work in fancy cooking. Tuesdays, breakfast will be prepared; Wednesdays, a three-course dinner; Thursdays, a luncheon; Fridays, a five-course dinner, and Saturdays, a luncheon. Next month the divisions will exchange work.

D. M. Wilson, State Dairy Commissioner, caused the first arrest for violation of the dairy law in Cloud county. He had a State warrant issued April 1 charging Edward Brown, of Aurora, with manipulating the Babcock test in buying cream so that the farmer making the delivery was given the best of it by about ten per cent. Mr. Wilson was present when the test was made and when he called Brown's attention to the error Brown "sassed" him. He didn't know Wilson.—*Mercury.*

Supt. J. H. Miller organized a farmers' institute at Louisburg on Saturday, April 4, another at Troy on April 11, another at Broughton, Monday, April 13, and on Saturday, April 18, he will hold a meeting at Riley, Riley county, where he will be assisted by Prof. J. C. Kendall.

Junior John A. Porter, a brother of H. E. Porter, instructor in mathematics, will not be in College this term, as he is preparing to take an extended trip to Europe. Mr. Porter will leave May 9 and will go with his friend, Mr. C. P. Bolman, of Topeka. They will land in Liverpool, and after touring London will take a trip down through Germany, France, Switzerland, probably touching Spain, and thence back to America, landing in New York City. Mr. Porter expects to return in time to reënter school next fall.—*Republic.*

Capt. P. M. Shaffer, of the 25th United States Infantry, formerly instructor in Military Science at this College and at present stationed with his regiment at Manila, sends us a copy of the weekly *Manila Opinion*, a very well-printed magazine of thirty-two octavo pages with colored cover. We are glad to hear of the captain and judge from the items and pictures in the *Opinion* that Manila is not a bad place to live in, especially for a young and unmarried officer; but really we could not find a single line in the whole issue referring to the gallant captain or his brave regiment unless it is the page headed "Out of the Corner of the Eye" and the picture of a Manila beauty riding on a Carabu ox.

The Catholics have closed the deal for the purchase of the Colonel Anderson residence property, paying $14,000 for it, and will establish here a parochial school under the care of the Sisters of St. Joseph. This means that Manhattan will begin to be a center of Catholic activity. These schools, where established, tend to bring in large numbers of pupils from both Protestant and Catholic families, the careful supervision given the pupils being greatly appreciated by parents regardless of religious faith. Though it is not yet decided whether or not it will be a boarding-school at the start, it will undoubtedly become one in time. The bishop at Concordia will have general supervision, and the teachers will be sent here from the Concordia convent school. Both boys and girls will be admitted. The future of the school will depend upon the patronage. If the patronage justifies, it will grow into an academy. This school means a great deal to Manhattan, as it will tend to bring here many Catholic families who desire to be in touch with a school of their own faith.—*Republic.*

Alumni and Former Students.

Born, to Geo. A. Dean, '95, and Minerva (Blachly) Dean, '00, on March 29, a son.

N. L. Towne, '04, after some experiences in the West, seems to be anchored for the present on Meadow Spring Farm, R. F. D. No. 1, Waverly Kan. He feels the need of the INDUSTRIALIST and wishes it sent there.

E. D. Richardson, '06, is now at Cawker City, Kan., and writes that he is doing a thriving business repairing automobiles.

Ernest L. Cottrell, '99, visited the College this week in company with Mrs. Amos L. Cottrell, an Elgin, Ill., who was getting her first ideas concerning the "Wild and Woolly West." She seemed to be very favorably impressed with her husband's Alma Mater.

Capt. Will Cavanaugh ['96], of Fort Douglass, Utah, visited in the city Saturday with Bert Harrop and other friends. Captain Cavanaugh is a graduate of the K. S. A. C., his father being a former professor of military science and tactics at the College.—*Republic.*

Changes of address: G. F. Bean, '02, Alma, Kan.; F. C. Webb, '04, R. F. D. No. 1, Viola, Kan.; E. J. Abell, '95, Riley, Kan.; F. E. Rader, '95, Etiwanda, Cal.; R. W. Rader, '95, in care of Crosby Bros., Topeka, Kan.; W. A. Barnard, '05, Ogden, Kan.; Jane C. Tunnell, '89, 218½ N. Hickory street, Joliet, Ill.; George Spohr, '06, 916 Harrison street, Kansas City, Mo.; J. W. Ijams, '90, Cache, Okla.; Gertrude (Hole) Campbell, '06, 609 Pottawatomie street, Hiawatha, Kan.; W. E. Mathewson, '01, and Milo M. Hastings, '06, 6005 Ellis Avenue, Chicago, Ill.; H. R. Reed, '07, Garden City, Kan.

The alumni will be glad to learn that under the skillful hand of Miss Jane Bartlett the portraits of the former presidents, Denison and Fairchild, are well under way. The portrait of Doctor Denison is nearly complete, and is pronounced an excellent likeness by all who knew him. The Berea portrait of President Fairchild, painted by Miss Bartlett, is here and is very satisfactory. Ours will be a duplicate of that. As the committee lacked funds sufficient for three portraits, in accordance with the vote of the Association, it ascertained the preferences of those who had contributed, and the order for the two was based on the result of that inquiry. Miss Bartlett's work is so eminently satisfactory, and the terms upon which she can be secured at the present time to paint a portrait of President Anderson are so moderate, that it would seem that the friends of the latter should not permit the present opportunity to pass without securing his portrait. President Anderson, with his abounding common sense, splendid courage, and limitless energy, set the College so far on the high road to being a great technological school that it has never been diverted from the way since. Surely his friends, and those who admire that work, will respond liberally in contributing the funds necessary to have his portrait painted now. The committee, J. C. Christensen, Manhattan, Kan., treasurer, needs one hundred and fifty dollars more at once. Amounts from twenty-five dollars down to twenty-five cents will be thankfully received. This committee has done much hard work and, as is usually the case, has received scant appreciation. A justifiable consciousness of a good thing successfully accomplished is probably all the reward that it will get. Send it your dollars to-day.

STUDENTS' RECITAL

Department of Music, K. S. A. C.

Auditorium, April 16, 1908

1. Harmonius Blacksmith.....*Handel*
   MABEL SPENCER.

2. { *a.* Night Song in F.....*Schumann*
   { *b.* Etude in A *b*.....*Wollenhaupt*
   MARIA MORRIS.

3. Song Cycle.—Summertime.....*Landon Ronald*
   Day Break Evening
   Morning Night
   HALLIE SMITH.

4. The Butterfly.....*Lavallee*
   DE NELL LYON.

5. Sublime Evening Star.....*Wagner-Liszt*
   EUGENIA FAIRMAN.

6. Spanish Dance.....*Refeld*
   R. R. HAND.

7. Polish Dance.....*Scharwenka*
   LEON DAVIS.

8. Song Cycle.—Indian Love Lyrics....*Amy Woodforde-Finden*
   The Temple Bells Kashmiri Song
   Less Than the Dust Till I Wake
   EDNA BIDDISON.

9. Valse Brilliante.....*Chopin*
   MABEL SPENCER.

10. { *a.* To the Spring.....*Grieg*
    { *b.* Norwegian Bridal Procession.....*Grieg*
    CLARA WOESTEMEYER.

11. Passage Bird's Farewell.....*Hildach*
    MISSES SMITH AND BIDDISON.

Board of Instruction (concluded).

JACOB LUND, M. S. (K. S. A. C.) ..... Superintendent Heat and Power Department
JOHN H. MILLER, A. M. ..... Superintendent Farmers' Institutes
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.) ..... Secretary
CLARENCE L. BARNES, D. V. M. (Cornell) ..... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B. S. (Chicago) ..... Assistant Professor of Physics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.) ..... Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard) ..... Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.) ..... Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.) ..... Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K. S. A. C.) ..... Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago) ..... Assistant Professor of Mathematics

---

Miss Ada Rice, B. S. (K. S. A. C.) ..... Instructor in English
Miss Ella Weeks, A. B. (U. of K.) ..... Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount) ..... Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University) ..... Instructor in Veterinary Science
Robert E. Eastman, M. S. (Cornell University) ..... Instructor in Horticulture
Miss Ula M. Dow, B. S. (K. S. A. C.) ..... Instructor in Domestic Science
Theo. H. Scheffer, A. M. (Cornell University) ..... Instructor in Zoölogy
Herbert H. King, M. A. (Ewing College) ..... Instructor in Chemistry
John B. Whelan, B. S. (Nebraska) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Miss Gertrude Barnes ..... Assistant Librarian
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.) ..... Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.) ..... Foreman of Foundry
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C) ..... Assistant in Printing
Roy A. Seaton, B. S. (K. S. A. C.) ..... Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College) ..... Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale) ..... Assistant in Architecture and Drawing
Chas. Yost ..... Assistant in Heat and Power Department
Earle B. Milliard ..... Foreman of Blacksmithing
J. T. Parker, ... Assistant in Woodwork
J. D. Magee, A. M. (Chicago) ..... Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit) ..... Assistant in German
Miss Florence S. Latimer, B M. (Ferry Hall Seminary) ..... Assistant in Music
Miss Marjorie Russell (Mechanics' Institute) ..... Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.) ..... Assistant in Botany
Burton Rogers, D. V. M. (Iowa State College) ..... Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal) ..... Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.) ..... Assistant Chemist, Experiment Station
Edw. C. Crowley, Ph. B. (Yale) ..... Assistant in Chemistry
Hugh Oliver ..... Assistant in Heat and Power Department
Miss Charlaine Furley, B. A (Fairmount) ..... Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (U. of K.) ..... Assistant in Preparatory Department
Leland E. Call, B. S. (Ohio State University) ..... Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University) ..... Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.) ..... Assistant in English
William C. Lane, B. S. (K. S. A. C.) ..... Assistant in Physics
Louis H. Beall, A. B. (Denison) ..... Assistant in English
Miss Flora C. Knight, A. B. (Uni. of Wyoming) ..... Assistant in English
Miss Grace H. Woodward (Boston School of D. S.) ..... Assistant in Domestic Science
Miss Nellie Cave ..... Assistant in Music
Miss Anna I. McKirahan ..... Assistant in Music
Miss Margaret Mack (K. S. N.) ..... Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.) ..... Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.) ..... Assistant in Botany
Charles E. Bassler, D. V. M. (K. S. A. C.) ..... Assistant in Veterinary Science
Miss Mary W. Hancock (Mechanics' Inst.) ..... Assistant in Domestic Art
S. W. McGarrah, A. M. (Grove City College) ..... Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.) ..... Assistant in Animal Husbandry
Arthur L. Peck, B. S. (Mass. Ag. Coll.) ..... Assistant in Horticulture
Kirk H. Logan, B. S. (U. of K.) ..... Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College) ..... Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University) ..... Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College) ..... Assistant in Preparatory Department
Loren Clark ..... Assistant in Printing
Miss Bertha M. Johnston (Simmons College) ..... Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.) ..... Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University) ..... Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.) ..... Assistant in Agronomy
Earle Brintnall, B. S. (Iowa State College) ..... Assistant in Dairy Husbandry
William Neill ..... Dairy Herdsman
G. A. Porteous ..... Herdsman
Wm. A. Lamb ..... Poultryman
Floyd Howard ..... Farm Foreman
William R. Lewis ..... Custodian

THE INDUSTRIALIST

Historical Society

Vol. 34 No. 28

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

The Industrialist.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

TERMS AND VACATIONS.

FALL TERM, 1907, THIRTEEN WEEKS.

Thursday, Friday, and Saturday, November 28, 29, and 30.....Thanksgiving vacation
Thursday and Friday, December 19, 20.....Examination at close of term

WINTER TERM, 1908, TWELVE WEEKS.

Monday, January 6.....Examination for admission, at nine A. M.
Tuesday, January 7.....Winter term begins
Tuesday, January 7.....Short courses in agriculture and dairying begin
Saturday, February 1.....Annual intersociety oratorical contest
Saturday, February 15.....Mid-term examination
Thursday, March 19.....Annual concert
Thursday and Friday, March 26, 27.....Examination at close of term

SPRING TERM, 1908, ELEVEN WEEKS.

Monday, March 30.....Examination for admission, at nine A. M.
Tuesday, March 31.....Spring term begins
Saturday, May 9.....Mid-term examination
Tuesday, May 19.....Beginning of summer course in domestic science
Tuesday and Wednesday, June 16, 17.....Examination at close of year
June 14 to 18.....Exercises of Commencement week
Thursday, June 18, at ten A. M.....Commencement
June 19 to September 16.....Summer vacation

FALL TERM, 1908,

Wednesday, September 16.....Examination for admission, at nine A. M.
Thursday, September 17.....College year begins

BOARD OF REGENTS.

HON. A. M. STORY, President.....Manhattan
HON. J. O. TULLOSS ['99], Vice-President.....Sedan
HON. J. S. MCDOWELL.....Smith Center
HON. GEO. P. GRIFFITH.....Hays
HON. EDWIN TAYLOR.....Edwardsville
HON. W. E. BLACKBURN.....Anthony
PRES. E. R. NICHOLS, Secretary *ex-officio*.....Manhattan

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
CHARLES WM. BURKETT, M. SC. (Ohio State University).....Director Experiment Station
JOHN D. WALTERS, M. S. (K. S. A. C.).....Professor of Architecture and Drawing
JULIUS T. WILLARD, M. S. (K. S. A. C.).....Professor of Chemistry, Vice-Director Exp. Station
BENJ. L. REMICK, Ph. M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B. S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M. S. (K. S. A. C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph. M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S. B. (Mass. Inst. Tech.). Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M. S. (K. S. A. C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A. M. (U. of R.), Ph. D. (Univ. of City of New York).....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B. S. (K. S. A. C.).....Professor of Domestic Science
RALPH R. PRICE, A. M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A. M. (Central Wesleyan College).....Professor of Economics
JOHN V. CORTELYOU, A. M. (Uni. of Neb.), Ph. D. (Heidelberg).....Professor of German
OLOF VALLEY, B. M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D. V. S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B. S. A. (Iowa State College).....Professor of Animal Husbandry
WALTER E. KING, M. S. (Cornell).....Professor of Bacteriology
THOMAS J. HEADLEE, Ph. D. (Cornell).....Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U. S. A.....Professor of Military Science
JOHN C. KENDALL, B. S. (N. H. A. & M.).....Professor of Dairy Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art
MISS ANNE M. BOYD, A. B., Lib. Sci. (Millikin).....Librarian
ROBERT J. BARNETT, B. S. (K. S. A. C.).....Principal Preparatory Department

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., APR. 18, 1908. No. 28

Breeding Corn.

The importance of seed is self-apparent. Without seed no plant of the higher orders can perpetuate its species. It is not so generally understood, however, that the laws of heredity apply to the millions of individuals in the plant kingdom as inexorably as to the members of the animal kingdom. Poor seed, according to some farmers, is much more apt to bring forth good fruit than is a poor animal apt to be the progenitor of a good animal. A possible explanation of this lack of understanding lies in the fact that the form of the plant and its habits of growth are so different from those of an animal, where a merely superficial view is taken. The plant appears to be inanimate; it does not have the power of locomotion; it does not have feeling or sensation so far as we know; its likes and dislikes are the more mechanical manifestations of plant activities; and it does not hear, or see, or smell. Nevertheless it seems to be about as well established as anything can be that plants are much influenced by their environment as are animals; that they respond to good or ill treatment just as do domestic animals, yielding in one case a profit, in the other a loss to the cultivator; that parent plants impart hereditary traits just as certainly as do parent animals. The sooner the cultivator comes to realize that he is a breeder, just the same as his neighbor who raises fine bred cattle or hogs, the better it will be, not only for his own interests, but also for the best interests of all.

The earth must yield her sustenance to support animal life, and as animal life, especially human animal life, populates the earth in steadily increasing numbers, the earth must be made to yield more and more sustenance. The opening up of new lands every year has made this possible; but when the new lands are all brought under cultivation, as they must be some day, and there are no more to be thrown open to settlement, some other means must be taken to obtain increased food supplies for the hordes of hungry stomachs. If the time should ever come when the earth fails to yield sufficient to maintain her population, there must inevitably ensue a struggle between the individuals of the human race such as may be witnessed, occasionally, in the lower orders

of the plant kingdom. From such a struggle for existence it generally happens that those who are strongest in brute strength emerge triumphant, the others perishing; but with the human species, intellectual intelligence might be pitted against brute strength and a different result obtained. Still it would be true that the law of the survival of the fittest held.

Instead of there being a dearth of food supplies, there is enough wasted in America every year to support a population as great as the one now supported. The average western farmer wastes enough to support several families, as families are maintained in some of the eastern countries. There is not only a waste of food actually produced—there is a waste of producing power when land, instead of producing good crops, brings forth indifferent crops, perhaps only weeds, and there is a criminal waste of fertility—criminal because it robs society and takes away from unborn posterity its rightful heritage. But perhaps as bad as any other is the waste of time and money in trying to raise good crops from poor seed. A stoppage of any one of these wastes means an immense increase in total production. Farmers must learn economy; if not from an egotistic point of view, then from an altruistic one.

On the subject of good seed there may have been excuse for ignorance in the past, but there is not now. The experiment stations, agricultural colleges and the farm papers and magazines have published so much on this subject that it seems impossible that the humblest farmer has not at least been notified, so that if he so desired he might obtain the needed information. There is no salvation for the farmer who does not take a farm paper and refuses to subscribe for one when solicited to do so; he is beyond hope. Nor is there much hope for that large class of farmers who takes the papers and neglects to read them, or reading them fails to profit thereby. Such will be pushed aside and relegated to the rear. Dwight Funk, of the firm of Funk Bros., seed-corn breeders of Illinois, explains the hesitancy of some farmers to buy improved seed by calling attention to the fact that they have been "gold-bricked" so often. The seedsmen's business, however, by state and national laws, is being put upon as honest a basis as any other business. Mr. Funk asserts that, once let the farmer thoroughly understand the question and he becomes a permanent convert. (Am. Breeders' Ass'n., Vol. I, p. 30.)

Taking up the subject under the first head, we find that the use of the score-card is of recent origin, and probably from that reason is somewhat misunderstood. With reference to its practical

utility, there is diversity of opinion. According to Eugene Funk, of the firm above mentioned, there are a great many who have attempted to combine the "ear-row" method of corn breeding with the use of the score-card without attaining any marked success. Some having implicit faith in the score-card method, gave up the "ear-row" method. The great weakness of the score-card lies in its failure to note the inherent qualities of the grain, while all other qualities, some of which are superficial, are emphasized. "The score-card has had its day," is the opinion of Mr. Funk, "for the corn breeder." (Am. Breeders' Ass'n., Vol. III.) "It served to arouse interest in a vital subject that was beneficial, but its usefulness is to the corn grower." Just why the score-card should be useful to the corn grower and not at all useful to the corn breeder Mr. Funk does not explain. What does the corn breeder do with his corn but sell it to the corn growers? If the grower, using the score-card when he comes to purchase his seed, finds that it falls short of his standards, will he buy of the breeder? It may fairly be asked: How should the breeder's seed-corn differ from the corn grower's seed-corn? And does the breeder have to have an ideal type to strive for, and can not this type be as definitely fixed as a type of animal, *e. g.*, the dairy type of cow? And finally, is not the corn *breeder* a corn *grower?*

If laxness is to be permitted to one or the other, breeder or grower, it would seem to the writer that it would not be the breeder who would be allowed license. The breeder should be the leader; the one to set the example. If the breeders did not have the same ideal in mind as to length or circumference or other type characteristics of a variety of corn, how long would it be until chaos would result? There would be as many different strains of a variety as there were breeders. No man would know what the variety really should be like, and it would be possible for the original type characteristics to be so altered as to make the final product look like an entirely different variety from the original. Mr. Funk says that the student judges at the International Exposition, in giving their reasons, frequently failed to give any which were valuable from a utility standpoint. If this be true, it was not the fault of the score-card. At the Kansas State Agricultural College, sixty points out of one hundred in the score-card in use may fairly be called utility points, for they have to do with yield, vitality, and value for feeding or marketing. Any judge using this score-card would have to disregard three-fifths of the points if his "reasons were practically valueless from a utility standpoint."

Of course, one cannot look at a sample of corn and form an ac-

of the plant kingdom. From such a struggle for existence it generally happens that those who are strongest in brute strength emerge triumphant, the others perishing; but with the human species, intellectual intelligence might be pitted against brute strength and a different result obtained. Still it would be true that the law of the survival of the fittest held.

Instead of there being a dearth of food supplies, there is enough wasted in America every year to support a population as great as the one now supported. The average western farmer wastes enough to support several families, as families are maintained in some of the eastern countries. There is not only a waste of food actually produced—there is a waste of producing power when land, instead of producing good crops, brings forth indifferent crops, perhaps only weeds, and there is a criminal waste of fertility—criminal because it robs society and takes away from unborn posterity its rightful heritage. But perhaps as bad as any other is the waste of time and money in trying to raise good crops from poor seed. A stoppage of any one of these wastes means an immense increase in total production. Farmers must learn economy; if not from an egotistic point of view, then from an altruistic one.

On the subject of good seed there may have been excuse for ignorance in the past, but there is not now. The experiment stations, agricultural colleges and the farm papers and magazines have published so much on this subject that it seems impossible that the humblest farmer has not at least been notified, so that if he so desired he might obtain the needed information. There is no salvation for the farmer who does not take a farm paper and refuses to subscribe for one when solicited to do so; he is beyond hope. Nor is there much hope for that large class of farmers who takes the papers and neglects to read them, or reading them fails to profit thereby. Such will be pushed aside and relegated to the rear. Dwight Funk, of the firm of Funk Bros., seed-corn breeders of Illinois, explains the hesitancy of some farmers to buy improved seed by calling attention to the fact that they have been "gold-bricked" so often. The seedsmen's business, however, by state and national laws, is being put upon as honest a basis as any other business. Mr. Funk asserts that, once let the farmer thoroughly understand the question and he becomes a permanent convert. (Am. Breeders' Ass'n., Vol. I, p. 30.)

Taking up the subject under the first head, we find that the use of the score-card is of recent origin, and probably from that reason is somewhat misunderstood. With reference to its practical

utility, there is diversity of opinion. According to Eugene Funk, of the firm above mentioned, there are a great many who have attempted to combine the "ear-row" method of corn breeding with the use of the score-card without attaining any marked success. Some having implicit faith in the score-card method, gave up the "ear-row" method. The great weakness of the score-card lies in its failure to note the inherent qualities of the grain, while all other qualities, some of which are superficial, are emphasized. "The score-card has had its day," is the opinion of Mr. Funk, "for the corn breeder." (Am. Breeders' Ass'n., Vol. III.) "It served to arouse interest in a vital subject that was beneficial, but its usefulness is to the corn grower." Just why the score-card should be useful to the corn grower and not at all useful to the corn breeder Mr. Funk does not explain. What does the corn breeder do with his corn but sell it to the corn growers? If the grower, using the score-card when he comes to purchase his seed, finds that it falls short of his standards, will he buy of the breeder? It may fairly be asked: How should the breeder's seed-corn differ from the corn grower's seed-corn? And does the breeder have to have an ideal type to strive for, and can not this type be as definitely fixed as a type of animal, *e. g.*, the dairy type of cow? And finally, is not the corn *breeder* a corn *grower?*

If laxness is to be permitted to one or the other, breeder or grower, it would seem to the writer that it would not be the breeder who would be allowed license. The breeder should be the leader; the one to set the example. If the breeders did not have the same ideal in mind as to length or circumference or other type characteristics of a variety of corn, how long would it be until chaos would result? There would be as many different strains of a variety as there were breeders. No man would know what the variety really should be like, and it would be possible for the original type characteristics to be so altered as to make the final product look like an entirely different variety from the original. Mr. Funk says that the student judges at the International Exposition, in giving their reasons, frequently failed to give any which were valuable from a utility standpoint. If this be true, it was not the fault of the score-card. At the Kansas State Agricultural College, sixty points out of one hundred in the score-card in use may fairly be called utility points, for they have to do with yield, vitality, and value for feeding or marketing. Any judge using this score-card would have to disregard three-fifths of the points if his "reasons were practically valueless from a utility standpoint."

Of course, one cannot look at a sample of corn and form an ac-

curate estimate of what the yield per acre might have been. He cannot even tell what the yield will be next year if given certain climatic conditions unless he has some record of past performance. But the same limitations hold true with the use of the score-card in animal breeding. No one would think of urging such objections to its use in judging live stock. If these are not parallel cases, wherein lies the difference? Records of past yields there should be, and farmers who purchase seed-corn of seedsmen are too apt to judge its desirability as would the student judge using only a score-card, *i. e.*, with no thought of its inherent yielding qualities. The two ideas go together; they should not be separated. The score-card cannot be rejected entirely simply because it is not always used rightly, or because of its limitations? "An ear of corn which scores high is a nice ear of corn in appearance, and 'nice ears' of corn are not always necessarily 'good breeders,' but it is generally true that 'good breeders' are 'nice' ears of corn. The final test of a good ear of corn is to plant the seed and secure the crop, but the score-card is a great aid in selecting good ears for planting." (Prof. A. M. TenEyck, Second Annual Report, Kansas Corn Breeders' Association.)

At the Kansas State Agricultural College corn is judged under two general divisions of the subject, namely, "Trueness to Type or Breed Characteristics," and "General Quality as Related to Yield, Feeding Value, and Vitality of Seed." The first sub-head is worth forty points; the second is worth sixty points. Under the first sub-head, shape of ears is given ten points, length and circumference of ears receive five points each, color of grain and of cob, five each, and uniformity of kernels, ten points. Considerations of color are often called "fancy points;" but all of these points are indicators of purity in breeding, and purity we must have. Under general quality the first four points—butts of ears, 5 per cent; tips of ears, 5 per cent; kernels of ears as to shape, 10 per cent, and as to depth, 10 per cent; space between kernels, 5 per cent—all indicate yield and are therefore important. "Composition and Feeding Value" is worth 10 per cent. The idea is that from a feeder's standpoint the kernel should have a large germ, containing the oil, and a large proportion of the horny layer, containing the larger proportion of protein. The large germ has another value in that it indicates strong vitality. The importance of horny layer is apt to be over emphasized. Funk Bros. have concerned themselves mightily in breeding "high protein" corn. Now, protein can be obtained in a much cheaper form in the shape of the hay crop of some leguminous plant, *e. g.*, alfalfa. And at the same time

the soil is not being impoverished of nitrogen as in corn culture, but rather made richer in the supply of that element. Finally, the market condition and vitality, as indicated by vitality (10 per cent), and soundness or freedom from injury (5 per cent), are considered. All these points make 100 per cent. Placing them down in order on a piece of paper and comparing a sample of corn with the standard or ideal thus put before one constitutes the process of judging by the score-card.

As a final word on the score-card the writer wishes to say that he believes there are too many score-cards in use. Almost every state in the corn belt has a score-card of its own. This causes much confusion. It is true that good corn judges may honestly differ as to the comparative importance of the points involved, but they ought to be able to get together and adopt a universal score-card, just as animal breeders have done. Each variety will have different standards, and it may be found that the standards will vary in different localities of the corn belt, soil and climatic conditions being so much different, so that it may be advisable to use slightly different score-cards for different varieties, just as swine breeders use several different score-cards for the different breeds; but just as every Poland China breeder uses the same score-card, so every breeder of Reid Yellow Dent should use the same score-card.

The second heading under this subject is selection. It is difficult to speak of the selection of seed-corn without speaking of the score-card; but the score-card having been considered, selection will be taken in a larger sense. The subject of breeding includes selection as one of its most important sub-heads. There could be no improvement in breeding operations without intelligent selection. A prospective breeder must first select his variety. This selection will depend upon soil and climatic conditions primarily, and to a less extent upon the purpose for which the corn is grown. If he wishes to try a new variety or to adapt an old one to new conditions, his success will depend upon his ability to select the best-matured ears produced from seed of that variety planted in a trial plot. According to Prof. A. D. Shamel, of the Department of Agriculture, such a selection is *all* important. He recommends that, in testing a new variety, at least an acre, and better still five acres, should be planted in order that adequate selection may be made. (Kansas Corn Breeders' Association, Second Annual Report.) It is Professor Shamel's idea, also, that, all our present varieties suffering from a lamentable lack of uniformity, there is unbounded opportunity for the selection of new and improved

types because of natural versatility. "Standards should be made for each new variety, modified, perhaps, as the variety develops." What appears to be a contrary view is one held by Professor Ten-Eyck. The quotation following is from "Plant Adaptation" (Am. Breeders' Ass'n., Vol. III): "I should prefer to reduce the number of varieties of the different crops which are now being cultivated, and by selecting a few of the very best varieties, and growing and breeding them locally, a local adaptation may be affected by which the seed of a certain variety may become superior for planting in a certain part of the country. It will not be necessary to have a different name for the corn of each section. Reid Yellow Dent, for instance, may perhaps be bred and adapted for growing successfully throughout the whole corn-growing area of Kansas. The corn would be Reid Yellow Dent wherever grown, but each section of the State would have its particular strain of seed, differing little if any in type to corn grown in other sections of the State, but differing much, perhaps, in adaptation to a certain environment."

It is coming to be more generally recognized every year by good corn students that selection of seed should be made in the field. Selection as it is usually made does not take into consideration the sire. Nothing is known of the sire unless one goes into the field and sees the stalk. It is a dictum of animal breeders that "the sire is half the herd." In plant breeding it would seem reasonable that the sire was at least of equal importance with the dam. The influence of the sire is recognized by J. Dwight Funk (Am. Breeders' Ass'n. Vol. II p. 89): "He (corn-breeder) must work for the *elimination of all weak members*, and control and direct the life forces of the best individuals into beneficial and prolific channels. The influence exerted by *both* parents must be controlled. He must deal not only in a general way with the performance of the family but directly with the performance of the immediate parents. Then having produced an individual within a strain of marked ability, whose sire is of equal merit, he must propagate this seed in confinement; that is, keep it to itself, individualize it; always, however preventing self-fertilization of the seed intended for breeding purposes."

Mr. Funk, in selecting champion rows of his breeding plot, eliminated rows which (1) germinated poorly, (2) lacked vigor and strength of growth, (3) suckered abnormally, (4) produced ears too high upon the stalk, (5) fell low in the per cent of standing stalks at harvest time. Now, the last four of these deficiencies inducing the rejection of the whole progeny of the

mother ear were very probably hereditary characteristics transmissable through the influence of the sire. This should give an idea of the importance of the sire. Each one of these sire deficiencies had to be eliminated, and at the same time only the highest yielding ears selected. Mr. Funk's method of accomplishing this was given as follows: "After the process of elimination above described, eight or ten of the most desirable rows as to yield and all other respects are left. Next year's breeding ears are selected from the dams of these rows. The dams of these rows are known and their records as to performance are found out. One-third of the corn of the cob of these ears, the dams, has been preserved. For next year's plot, the pieces of the ears which were the dams of the best rows are planted. They are mated in alternate rows, five rows from one ear and six from another, the eleven short rows making a miniature block. The even rows being detasseled serve entirely as the dam, and from these rows are selected the breeding ears. The other is used only as a sire. The kernels of these ears we know have been fertilized from a sire ear which the year before proved itself a champion. The best of these ears are planted together in a multiplying plot three to five acres in extent."

The problem of saving or storing the seed-corn is not difficult ordinarily in Kansas as in the more humid regions of the corn belt or in those states farther north. The Kansas grower is more apt to have fully matured corn—corn which can be stored immediately in a safe place and left to itself—and does not need constant attention and steady heat for several weeks in the fall like eggs hatching in an incubator. However, a few remarks will not come amiss. At the Kansas State Agricultural College, in the seed house, there are seed-corn racks made something like book-cases. Each drawer will hold about a bushel, or seventy pounds of ears, and is made of wire netting tacked onto a wooden frame. Air can circulate freely, and the meshes of the wire are fine enough to keep out the rodents. Fumigation is practiced to prevent the granary pests, *e. g.*, Auguomois grain moth, getting a start. Artificial heat from a stove in the room is used more or less, depending upon the stage of maturity of the corn when harvested and the atmospheric conditions after harvesting. Such a method is recommended by H. J. Webber, physiologist plant breeder, United States Department of Agriculture, in Farmers' Bulletin No. 229. "In one experiment of Mr. Hartley, on the department's experimental farms, "kiln-dried seed" gave an average yield of sixteen bushels per acre more than ordinary air-dried corn of the same va-

riety grown in the same place. The air-dried and kiln-dried seeds were planted in alternate rows.

Prof. P. G. Holden, of Iowa State College, thinks there is no better place to store seed-corn than in the attic. He recommends a method of stringing the ears and hanging them from a wire, ten ears to a string. This gives thorough circulation of the air, preventing molding, and prevents loss by rats and mice; however, this method of storing must certainly take more time. Professor Holden estimated that in 1906 seed cost the state of Iowa 60 to 70 million bushels of corn, at the very lowest possible estimate. In order to have plenty to select from and to guard against possible accident, he recommends that for each forty acres to be planted fifteen to twenty bushels should be saved in the fall.

The shrinkage of corn, unless it be exceedingly dry when stored, amounts to considerable. The following experiments are mentioned in Coburn's Book of Corn, p. 138:

	Per cent
Bulletin No. 26, Kentucky Station, November 11 to January 24, spread over floor	18.40
Report 1895, Rhode Island Station, November to March, average five varieties	15.70
Bulletin No. 45, Iowa Station, October to October (1 yr.), crib on scales	20.00
Bulletin No. 77, Iowa Station, October 24 to February 27	12.60
Bulletin No. 77, Iowa Station, October 31 to January 9, immature at harvest	17.49

Bulletin No. 113, Illinois Station, on "Shrinkage of Ear Corn in Crib," handles the subject in thirteen tables, in a very exhaustive set of experiments.

SUMMARY.

(1) No average terms can be given, conditions being at variance.

(2) Shrinkage for the first year ranged from 12 to 20 per cent.

(3) Number of cents increase per bushel necessary to compensate for shrinkage.

(4) Shrinkage of old corn relatively very slight.

(5) April and May, months of greatest shrinkage.

It is only necessary to cite two instances to prove that the germination test is of great practical value. Prof. A. D. Shamel, of Illinois, and Prof. P. G. Holden, of Iowa, have concluded, after extensive tests, that there is not more than an average of about 62 per cent of a perfect stand in those two states. The main causes of this deplorable stand are: First, irregular drop in planting; and second, seed-corn of poor vitality, the latter being the main cause. Professor Shamel (Second Annual Report, Kansas Corn Breeders' Association) recommends the method of Prof. P. G. Holden in making germination tests. It provides for the use of a shallow box nearly filled with damp saw-dust, over which is tightly stretched a cloth marked off into little squares. Each square is

numbered and is intended to hold the sample kernels from a single ear of corn. The seed being laid in the saw-dust and covered with the cloth is kept under favorable conditions for ten days. Then the samples are uncovered and an exact map of the vitality of the seed will be found. Farmers' Bulletin No. 253 recommends the same sort of a test, the only difference being that two or three thicknesses of heavy Canton flannel are used for the seed-bed. With this cloth the sampling can be done in less time than with soil or sand or saw-dust, and it is almost impossible to injure the corn by too much water. The department's final recommendation on the subject, set in italic type for emphasis, is that only those ears are to be used for seed in which every kernel tested has given a good, healthy sprout.

Prof. M. F. Miller, of the University of Missouri, Columbia, Mo., reported several interesting experiments before the Kansas Corn Breeders' Association (Second Annual Report, 1907). In determining the relation which size of germ bore to the strength of germination and to the ultimate strength of the plant, it was found in every instance that the large germs made considerable more growth in a period of fourteen days, both in the height of stalk and weight of green matter. "As a rule, a heavy germ will be one which has a large surface expansion." "If the germ is discolored, blistered, wrinkled, or roughened near the point, its vitality has usually been injured. It should be smooth, bright, clear, with an oily appearance when cut across, and the tip of kernel should not adhere to the cob." "In two trials, covering fourteen days' growth, the height of the stalk from the heavy kernels was three inches greater than from the small kernels, and weight of green matter approximately 50 per cent greater." "Shape of kernel is of importance in its influence on the size of the cob and the character of the germ. . . . Reports point plainly to the superiority of the medium lengths of kernels for producing a thrifty, early growth of plants."

This article will be closed with another quotation from Farmers' Bulletin No. 253. "Of 3322 ears tested, 455 were unfit for seed. These samples were taken from ears picked for seed by good, careful farmers, and are evidently much above the average. Granting that the samples tested are representative, the testing of every ear and the subsequent rejection of poor ears will increase the stand 13.7 per cent. An increased stand of 13.9 per cent would mean an increased annual yield of 298,140,695 bushels, with a value of $100,739,912.91, calculated on the average yield and price of the last two years."

A. R. SNAPP, '08.

Local Notes.

The College Y. M. C. A. moved into the new building this week.

The Y. W. C. A. girls spent Sunday afternoon at the Dow home, on College Hill.

The girls in the Secretary's office are busy recording the winter-term grades.

Secretary Clemons informs us that the enrolment for spring term is above the twelve hundred mark.

Asst. J. T. Parker, of the woodworking department, is the proud father of a pair of bran-new boys.

In a slow game last Monday in the Manhattan Athletic Park our team beat that of William Jewell College 8 to 2.

Miss Barbour, director of physical training, entertained the members of the girls' basket-ball teams Monday afternoon.

The Women's Relief Corps of Manhattan has presented to the literary societies of the College an American flag for each hall.

The new courses of study formulated by the Faculty and approved by the Board at their last meeting will be printed in full in the next INDUSTRIALIST.

The Riley County Normal Institute will be held in Manhattan, and this year it will begin June 1. Superintendent Veach and Miss Broughton will again be instructors.

Lieutenant Boice has made application for an appropriation of $1500 from the government to be used by the Military Department in holding an annual encampment for the College battalion.

The recital of the Music Department last Thursday night was a complete success, notwithstanding the bad weather. The parterre of the Auditorium was well filled with an appreciative audience and the program was well rendered.

Mr. B. H. Heide, general manager of the International Exposition at Chicago, spent a day at the College this week. He was here a year ago and speaks very favorable of the development of the great farm school of Kansas.

Last Saturday morning the seniors conducted chapel exercises. Instead of the usual order of things, the members of the class came to chapel early and occupied every seat on the rostrum, leaving the Faculty and assistants to occupy seats in the audience.

Superintendent Rickman, of the Printing Department, will leave Monday morning for Emporia to attend the annual meeting of the State Editorial Association. Mr. Rickman has been associated with the editors and printers of Kansas for some years, having moved to Kansas in '79. The people of Emporia, under the leadership of William Allen White, have arranged for a series of entertainments which, together with the meetings, ought to make it a pleasant outing for all who attend.

The College Dramatic Association will produce "The Taming of the Shrew" Monday, April 20, at 8 P. M., in the Auditorium. Admission will be 25 cents. Seats will be reserved on Friday at 1 P. M. in the Coöperative bookstore and in Dr. Willard's drug store.

Professor Kinzer visited the W. V. Todd ranch, near Maple Hill, Sunday. This is one of the largest cattle-feeding ranches in the State. They are feeding at present about seven hundred head of fancy Herefords and breed their steers on their large ranch in New Mexico.

The fourth annual Hamp.-Io. egg roast was held Saturday night on the banks of the classic Wild Cat creek two miles west of the College. It was a lovely evening and, to use the enthusiastic expression of one of the Hamps., who is a senior engineer, they all had a truly "pyramidal" time.

The Choral Union has presented the College Y. M. C. A. and the Y. W. C. A. with its treasury surplus, giving each association $75. The giving of these gifts to the associations is a custom that was established at the time of the first concert, and since that time about $700 has been donated in this way.

A delegation of trustees and professors from McPherson College was here last Tuesday to study our methods and means of teaching agriculture. The delegation consisted of Messrs. F. A. Vaniman, J. J. Yoder, B. S. Trosth, and H. J. Harnly. They stated that it was the intention of their institution to add a course in agriculture to the other courses.

The Department of Animal Husbandry announces the arrival of three bran-new Percheron colts. The father of two of them, Sire Bosquet, is the highest price Percheron ever sold at public auction in America. The father of number three is Niagara, a half-brother to the champion, Casino, of the St. Louis World's Fair. Professor Kinzer is extremely happy.

To-day (Saturday) Professor Eyer and twenty-four of his senior and junior electrical engineers will go to Fort Riley and Junction City to examine the electric-light plants and the power plant of the electric street railway between these places. In order to get some physical exercise out of the trip they will walk from the Fort to the City, a distance of nearly three miles.

There were twenty-four entries in the foot-race Monday of last week. The men ran against time. The four who made the best time and who were selected to run against Washburn College last Saturday afternoon were Detweiler, $54\frac{3}{5}$ minutes; Bentley, $55\frac{1}{5}$; Christian, $55\frac{3}{5}$; and McNall, $56\frac{1}{2}$. The relay race with Washburn, however, went against our boys by a small margin.

Miss Harriet Howell, formerly superintendent of the Department of Domestic Art of this College and at present teacher of similar work in a manual training school at San Luis Obispo, Cal., was a visitor at College this week. Miss Howell was greatly surprised at the many evidences of growth of this College, and especially of the Departments of Domestic Science and Domestic Art.

Henry Brinkman, '07, now located as practicing architect in Emporia, Kan., reports that he has plenty of high grade work on hand. Among the buildings now on his drawing table are two large brick churches (at Emporia and Olpe), a fine residence at Bazaar, the new government Post-office building at Manhattan (a $50,000 structure), and several smaller residences and cottages. *Gut für Heinrich!*

Of the several contemplated changes in the teaching force for next year we can announce the following: Miss Charlaine Furley, of the Preparatory Department, has been transferred to the English Department. Miss Bisby, of the Manhattan city schools, was elected to the position now occupied by Miss Furley. Miss Gertrude Cannon, of Smith Center, has been elected piano teacher to take the place made vacant by the resignation of Miss McKirahan.

The Printing Department has issued a prospectus of the new printing course to be started next fall term. The course will include practical instruction in all lines of printing, both in composition and presswork. Time is given for editorial and reportorial instruction. These are supplemented with history, English, and scientific studies. The intent of the course is to turn out men capable of editing and running a country newspaper, and will give a broad foundation to those wishing to specialize in any branch of the art.

Dr. C. W. Burkett, director of the College Experiment Station, has presented the local editor with advanced copies of the new "Hill Readers," published by Ginn and Co., New York, and edited by him and Profs. Harvey Hill and F. L. Stevens, of the North Carolina College of Agriculture and the Mechanic Arts. These readers, five in number, are certainly typographic beauties. They contain from 144 to 416 pages of print and an unusual number of very fine illustrations. The selected matter is inspiring and the original contents timely and practical. A feature which will appeal strongly to teachers in the country districts is the number of artistic selections illustrating country life and country thoughts. The interests of the country child have been more or less overlooked in the preparation of previous readers. This series, however, seems to be pervaded by a healthy out of-door atmosphere, which, created by such authors as George Sand, Long, Van Dyke, and Emerson, in no wise detracts from literary effectiveness in its happy rural charm. In this connection may be noted the ethical quality of the material contained in these readers. Man's proper relation to animals, to government, to country and to his fellows is here exemplified by the words and the acts of those whose principles and whose deeds have been applauded by the wisest sentiment of their respective countries. To meet the paucity of reference books in most of our schools, unusually full biographical notes have been appended, and with these an estimate of the author from another great author's point of view is frequently given. We predict an extensive sale for these timely school books.

The premium list of the Manhattan Fair Association is almost completed and the prize money figures up about $2000, outside of the racing schedule, which has not yet been prepared. Beside the money prizes there are hundreds of premiums of rosettes, diplomas, and similar decorations. It is also expected that the prize offerings will be greatly enriched by individual prizes, especially in the corn schedule.

Alumni and Former Students.

A daughter was born, April 8, to Gertrude (Hole) Campbell, '06, and D. M. Campbell, former student, at their home in Hiawatha, Kan.

Changes of address: R. N. Dorman, '04, R. F. D. No. 6, Station A, Topeka, Kan.; B. H. Pugh, '92, 324 Topeka Avenue, Topeka, Kan.; E. W. House, '02, 241 South 10th, Kansas City, Kan.; Emma E. Glossop, '83, 505 North 10th street, St. Joseph, Mo.

Miss Flora Rose, '05, lecturer on home economics, Cornell University, is having a busy year with her work there. She expects to be in New York in June finishing her thesis for her Master's degree at Columbia University, but will probably return to Ithaca later.

Miriam (Swingle) Joss, '96, Portland, Ore., will visit in this State for the next three months. She reports her husband, Dr. E. C. Joss, '96, as well pleased with the workings of the new meat-inspection law, the administration of which in Portland is under his charge.

Farmers' Bulletin No. 318 of the United States Department of Agriculture is a timely and valuable one upon the subject of "Cow-Peas," a crop worthy of much more attention in this State than it has yet received. The bulletin was prepared by H. T. Nielsen, '03. Particular attention is given to the matter of harvesting seed by machinery.

The Manhattan Alumni Association held a meeting Friday evening, April 10, which was attended by thirty members. The Committee on Memorial Portraits had on exhibition the portrait of Ex-President Fairchild which was painted by Miss Bartlett for Berea College, and which she will use in painting one for the alumni. The nearly completed portrait of Doctor Denison, the first President of the College, was also exhibited. Both portraits were very satisfactory to those present who knew the men. Mr. Christensen presented the subject of the desirability of securing funds to paint the portrait of Ex-President Anderson. Subscriptions to this end were made by many of those present. The Association designated its officers as a committee to coöperate with the Executive Committee of the Alumni Association in making the coming Triennial Reunion a success in every particular. Officers were elected as follows: President, C. M. Breese, '87; vice-president, F. A. Marlatt, '87; secretary, Mary (Davis) Ahearn, '04; treasurer, R. A. Seaton, '04.

Board of Instruction (concluded).

JACOB LUND, M. S. (K. S. A. C.) ..... Superintendent Heat and Power Department
JOHN H. MILLER, A. M. ..... Superintendent Farmers' Institutes
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.) ..... Secretary
CLARENCE L. BARNES, D. V. M. (Cornell) ..... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B. S. (Chicago) ..... Assistant Professor of Physics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.) ..... Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard) ..... Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.) ..... Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.) ..... Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K. S. A. C.) ..... Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago) ..... Assistant Professor of Mathematics

---

Miss Ada Rice, B. S. (K. S. A. C.) ..... Instructor in English
Miss Ella Weeks, A. B. (U. of K.) ..... Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount) ..... Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University) ..... Instructor in Veterinary Science
Robert E. Eastman, M. S. (Cornell University) ..... Instructor in Horticulture
Miss Ula M. Dow, B. S. (K. S. A. C.) ..... Instructor in Domestic Science
Theo. H. Scheffer, A. M. (Cornell University) ..... Instructor in Zoölogy
Herbert H. King, M. A. (Ewing College) ..... Instructor in Chemistry
John B. Whelan, B. S. (Nebraska) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Miss Gertrude Barnes ..... Assistant Librarian
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.) ..... Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.) ..... Foreman of Foundry
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C) ..... Assistant in Printing
Roy A. Seaton, B. S. (K. S. A. C.) ..... Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College) ..... Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale) ..... Assistant in Architecture and Drawing
Chas. Yost ..... Assistant in Heat and Power Department
Earle B. Milliard ..... Foreman of Blacksmithing
J. T. Parker ..... Assistant in Woodwork
J. D. Magee, A. M. (Chicago) ..... Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit) ..... Assistant in German
Miss Florence S. Latimer, B M. (Ferry Hall Seminary) ..... Assistant in Music
Miss Marjorie Russell (Mechanics' Institute ..... Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.) ..... Assistant in Botany
Burton Rogers. D. V. M. (Iowa State College) ..... Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal) ..... Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.) ..... Assistant Chemist, Experiment Station
Edw. C. Crowley, Ph. B (Yale) ..... Assistant in Chemistry
Hugh Oliver ..... Assistant in Heat and Power Department
Miss Charlaine Furley, B. A (Fairmount) ..... Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (U. of K.) ..... Assistant in Preparatory Department
Leland E. Call, B. S. (Ohio State University) ..... Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University) ..... Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.) ..... Assistant in English
William C. Lane, B. S. (K. S. A. C.) ..... Assistant in Physics
Louis H. Beall, A. B. (Denison) ..... Assistant in English
Miss Flora C. Knight, A. B. (Uni. of Wyoming) ..... Assistant in English
Miss Grace H. Woodward (Boston School of D. S.) ..... Assistant in Domestic Science
Miss Nellie Cave ..... Assistant in Music
Miss Anna I. McKirahan ..... Assistant in Music
Miss Margaret Mack (K. S. N.) ..... Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.) ..... Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.) ..... Assistant in Botany
Charles E. Bassler, D. V. M. (K. S. A. C.) ..... Assistant in Veterinary Science
Miss Mary W. Hancock (Mechanics' Inst.) ..... Assistant in Domestic Art
S. W. McGarrah, A. M. (Grove City College) ..... Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.) ..... Assistant in Animal Husbandry
Arthur L. Peck, B. S. (Mass. Ag. Coll.) ..... Assistant in Horticulture
Kirk H. Logan, B. S. (U. of K.) ..... Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College) ..... Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University) ..... Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College) ..... Assistant in Preparatory Department
Loren Clark ..... Assistant in Printing
Miss Bertha M. Johnston (Simmons College) ..... Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.) ..... Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University) ..... Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.) ..... Assistant in Agronomy
Earle Brintnall, B. S. (Iowa State College) ..... Assistant in Dairy Husbandry
William Neill ..... Dairy Herdsman
G. A. Porteous ..... Herdsman
Wm. A. Lamb ..... Poultryman
Floyd Howard ..... Farm Foreman
William R. Lewis ..... Custodian

NEW COURSES OF STUDY

THE

INDUSTRIALIST

Historical Society

Vol. 34 No. 29

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Calendar

May 19, 1908, Summer Course in Domestic Science begins
May 19, 1908, Summer Course in Agriculture begins
Sept. 17, 1908, College Year begins
Sept. 17, 1908, Domestic Science Short Course begins
Jan. 5, 1909, Farmers' Short Course begins
Jan. 5, 1909, Dairy Short Course begins

Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

Farmers' Short Course.

First Year. (Winter term, ten weeks.)			Second Year. (Winter term, ten weeks.)		
Crop Production	5		Botany	5	
Feeds and Feeding	5		Elementary Physics	5	
Breeds of Live Stock	5	4	Farm Mechanics and Mgt.	5	
Horticulture	5		Diseases of Farm Animals	5	
Carpentry		4	Grain Judging		4
			Blacksmithing		4

Dairy Short Course.

First Winter Term.			Second Winter Term.		
Breeding and Feeding	5	2	Butter and Cheese Making	5	10
Crop Production	5	2	Dairy Chemistry	2½	
Dairying	5	6	Boilers and Engines		4
Dairy Bacteriology	2½		Dairy Machines and Refrig.	2½	
Diseases of Dairy Animals	2½		Creamery Management	2½	
			Market Milk	2½	

Short Course in Domestic Science and Art.

Fall Term. (Thirteen weeks.)		Winter Term. (Twelve weeks.)	
Lectures and Practice in Cooking	15	Lectures and Practice in Cooking	15
Sewing	15	Physiology and Hygiene	5
Drawing	5	Vegetable-gardening and Floriculture	5
		Dressmaking	10

Summer Course in Domestic Science and Art.

First Summer Term.		Second Summer Term.	
Domestic Science	15	Domestic Science	5
Sewing	10	Household Economics	5
Floriculture	5	Dressmaking	10
		Bacteriology	5

Six Weeks' Summer Course in Agriculture For Teachers.

Soils and Crops	5
Botany and Horticulture	5
Animal Husbandry and Dairying	5
Entomology	5

The complete catalogue will be issued in June. Any one desiring a copy may address, E. R. NICHOLS, *President*,
Manhattan, Kan.

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., APR. 25, 1908. No. 29

The Courses of Study.

The courses of study appearing on the following pages will be offered beginning next College year. The freshman year is alike in all courses with such differences as sex requires. Thus a selection of the course to be taken need not be made till the beginning of the sophomore year. Graduates from any of the four-year courses will be granted the degree of Bachelor of Science. Students completing the graduate year will be granted a special bachelor's degree indicating the course completed, except in the veterinary course where the degree will be Doctor of Veterinary Medicine.

Freshman.

(All courses.)

FALL TERM:		
Classics	5	
Geometry I	5	
Physics I	5	2
El. Psychology	1	
Freehand Drawing		4
Woodwork I or Sewing I		4
Drill or Physical Training		4
WINTER TERM:		
Advanced Composition	5	
Geometry II	5	
Physics II	5	4
Object Drawing		4
Woodwork II or Sewing II		4
Drill or Physical Training		4
SPRING TERM:		
Rhetoric I	5	
Trigonometry	5	
Surveying or Color and Design I		4
Agriculture or Cooking	5	
Geometrical Drawing		4
Blacksmithing I or Sewing III		4
Drill or Physical Training		4

TERMS OF ADMISSION.

Persons over fourteen years of age will be admitted in any of the following ways:

1. Kansas teacher's certificate, provided no subject is below seventy per cent.
2. Diploma received on completion of a county course of study.
3. Certificate of passing the grammar grade or diploma from the high school of any city or county.
4. Pass a satisfactory examination in reading, spelling, writing, geography, arithmetic, United States history, English grammar, and physiology.

Persons over eighteen years of age will be admitted to the preparatory classes if unable to pass the common-school branches.

Full admission to the freshman year, in addition to the common-school branches enumerated in 4 above, requires bookkeeping, advanced English grammar, English readings, English composition, algebra through progressions, elementary botany, ancient, medieval, and modern history.

Agronomy Course.

First column of figures shows class hours per week.
Second column shows laboratory or industrial hours per week.

Sophomore.

FALL TERM:

Chemistry I	5	4
Zoölogy I	5	4
Dairying	5	4
Drill		4

WINTER TERM:

Chemistry II	5	4
Entomology	5	4
Horticulture	5	4
Drill		4

SPRING TERM:

Chemistry III	5	4
Live Stock I	2½	4
Farm Equipment	5	
Public Speaking I	5	
Drill		4

Junior.

FALL TERM:

Bacteriology I	2½	4
Plant Anatomy	5	4
Agricultural Chemistry I	2½	6
Geology	5	

WINTER TERM:

Animal Nutrition	2½	
Plant Physiology	5	4
Rhetoric II	5	
Soil Physics I	2½	4
Agricultural Chemistry II		4

SPRING TERM:

Civics	5	
Crop Production I	5	6
Stock Feeding	5	
Poultry	2½	2

Senior.

FALL TERM:

American History	5	
Farm Motors	2½	4
Soil Physics II	2½	6
Physiology	5	2
Thesis		3

WINTER TERM:

Economics	5	
Philosophy	5	
Farm Management	2½	2
Crop Production II	2½	4
Thesis		5

SPRING TERM:

Diseases of Farm Animals	5	
Plant Breeding	5	
Soil Fertility	2½	4
English Literature	5	
Thesis		4

Graduate.

FALL TERM:

Modern Language I	5
Elective in Agronomy	5
Elective	5
Public Speaking II	5

WINTER TERM:

Modern Language II	5
Elective in Agronomy	5
Elective	5
Advanced Botany	5

SPRING TERM:

Modern Language III	5	
Elective in Agronomy	5	
Elective	5	
Agricultural Chemistry III	5	4

Animal Husbandry Course.

First column of figures shows class hours per week.
Second column shows laboratory or industrial hours per week.

Sophomore.

FALL TERM:

Chemistry I	5	4
Zoölogy I	5	4
Dairying	5	4
Drill		4

WINTER TERM:

Chemistry II	5	4
Entomology	5	4
Horticulture	5	4
Drill		4

SPRING TERM:

Chemistry III	5	4
Live Stock I	2½	4
Farm Equipment	5	
Public Speaking I	5	
Drill		4

Junior.

FALL TERM:

Bacteriology I	2½	4
Agricultural Chemistry	2½	6
Geology	5	
Anatomy I	2½	8

WINTER TERM:

Animal Nutrition	2½	
Rhetoric II	5	
Bacteriology II	2½	4
Soil Physics I	2½	4
Zoölogy II	2½	4

SPRING TERM:

Stock Feeding	5	
Crop Production I	5	4
Civics	5	
Poultry	2½	2

Senior.

FALL TERM:

Diseases of Farm Animals	5	
Economics	5	
American History	5	
Live Stock II	2½	4
Thesis		4

WINTER TERM:

Embryology	5	4
Philosophy	5	
Farm Management	2½	2
Pedigree		4
Live Stock Management	2½	
Thesis		4

SPRING TERM:

Animal Breeding	5	
Farm Motors	2½	4
English Literature	5	
Obstetrics	5	
Thesis		4

Graduate.

FALL TERM:

Modern Language I	5	
Public Speaking II	5	
Principles of Animal Nutrition	5	
Experimental Work	2½	4

WINTER TERM:

Modern Language II	5	
Physiology	5	2
Rural Architecture	5	4
Crop Production II	2½	4

SPRING TERM:

Modern Language III	5	
Soil Fertility	2½	4
Meat Production	5	
Origin of Domestic Animals	5	

Dairy Course.

First column of figures shows class hours per week.
Second column shows laboratory or industrial hours per week.

Sophomore.

FALL TERM:

Chemistry I	5	4
Zoölogy I	5	4
Dairying	5	4
Drill		4

WINTER TERM:

Chemistry II	5	4
Entomology	5	4
Horticulture	5	4
Drill		4

SPRING TERM:

Chemistry III	5	4
Live Stock I	2½	4
Farm Equipment	5	
Public Speaking I	5	
Drill		4

Junior.

FALL TERM:

Bacteriology I	2½	4
Agricultural Chemistry	2½	6
Rhetoric II	5	
Anatomy I	2½	8

WINTER TERM:

Animal Nutrition	2½	
Civics	5	
Soil Physics I	2½	4
Bacteriology II	2½	4
Zoölogy II	2½	4

SPRING TERM:

Stock Feeding	5	
American History	5	
Crop Production I	5	6
Poultry	2½	2

Senior.

FALL TERM:

Diseases of Farm Animals	5	
Economics	5	
Live Stock II	2½	4
Butter Making	5	4
Thesis		2

WINTER TERM:

Philosophy	5	
Embryology	5	4
Pedigrees		4
Cheese Making	2½	4
Farm Management	2½	2
Thesis		1

SPRING TERM:

English Literature	5	
Animal Breeding	5	
Obstetrics	5	
Market Milk and Cream	2½	4
Dairy Management		4
Thesis		3

Graduate.

FALL TERM:

Experimental Dairying	5	4
Rural Architecture	2½	4
Dairy Chemistry	2½	4
Elective	5	
Thesis		2

WINTER TERM:

Management of Special Dairy Products	2½	4
Crop Production II	2½	4
Public Speaking II	5	
Elective	5	
Thesis.		

SPRING TERM:

Dairy Inspector	2½	4
Soil Fertility	2½	4
Landscape Gardening	2½	4
Dairy Seminary	2½	4
Elective	5	
Thesis		2

Horticulture Course.

First column of figures shows class hours per week.
Second column shows laboratory or industrial hours per week.

Sophomore.

FALL TERM:		
Chemistry I	5	4
Zoölogy I	5	4
Dairying	5	4
Drill		4
WINTER TERM:		
Chemistry II	5	4
Entomology I	5	4
Horticulture	5	4
Drill		4
SPRING TERM:		
Chemistry III	5	4
Live Stock I	2½	4
Farm Equipment	5	
Public Speaking I	5	
Drill		4

Junior.

FALL TERM:		
Bacteriology I	2½	4
Plant Anatomy	5	4
Geology	5	
Agricultural Chemistry I	2½	6
WINTER TERM:		
Civics	5	
Plant Physiology	5	4
Soil Physics I	2½	4
Agricultural Chemistry II		4
Animal Nutrition	2½	
SPRING TERM:		
Plant Pathology I	5	4
Stock Feeding	5	
Crop Production I	5	6
Poultry	2½	2

Senior.

FALL TERM:		
American History	5	
Economics	5	
Entomology II	2½	4
Pomology I or		
Forestry I	5	4
Thesis		2
WINTER TERM:		
Rhetoric II	5	
Philosophy	5	
Farm Management	2½	2
Fruit Growing or		
Dendrology	5	4
Thesis		4
SPRING TERM:		
English Literature	5	
Plant Breeding	5	
Vegetable Gardening and	2½	4
Landscape Gardening	2½	4
or Silviculture	5	4
Thesis		4

Graduate.

FALL TERM:		
Modern Language I	5	
Public Speaking II	5	
Pomology II or		
Forestry II or		
Greenhouse Const. &		
Heating	5	8
WINTER TERM:		
Modern Language II	5	
Plant Pathology II	5	4
Principles of Fruit Growing		
or Dendrology or		
Greenhouse Management	5	8
SPRING TERM:		
Modern Language III	5	
Fruit Products	5	4
Principles of Landscape		
Gardening or Forestry		
Policy or Bedding Plants	5	8

Poultry Course.

First column of figures shows class hours per week.
Second column shows laboratory or industrial hours per week.

Sophomore.

FALL TERM:

Chemistry I	5	4
Zoölogy I	5	4
Dairying	5	4
Drill		4

WINTER TERM:

Chemistry II	5	4
Entomology	5	4
Horticulture	5	4
Drill		4

SPRING TERM:

Chemistry III	5	4
Live Stock I	2½	4
Farm Equipment	5	
Public Speaking I	5	
Drill		4

Junior.

FALL TERM:

Bacteriology I	2½	4
Agricultural Chemistry	2½	6
Rhetoric II	5	
Anatomy I	2½	8

WINTER TERM:

Animal Nutrition	2½	
Civics	5	
Soil Physics I	2½	4
Bacteriology II	2½	4
Zoölogy II	2½	4

SPRING TERM:

Stock Feeding	5	
American History	5	
Crop Production I.	5	6
Poultry	2½	2

Senior.

FALL TERM:

Diseases of Farm Animals	5	
Economics	5	
Live Stock II	2½	4
Poultry Husbandry I	5	4

WINTER TERM:

Philosophy	5	
Embryology	5	4
Poultry Husbandry II	5	4
Farm Management	2½	2

SPRING TERM:

English Literature	5	
Animal Breeding	5	
Poultry Research	5	4
Thesis		10

Graduate.

To be supplied later.

Veterinary Course.

First column of figures shows class hours per week.
Second column shows laboratory or industrial hours per week.

Sophomore.

FALL TERM:

Anatomy I	2½	8
Chemistry I	5	4
Zoölogy I	5	4
Drill		4

WINTER TERM:

Anatomy II	2½	4
Chemistry II	5	4
Histology I	2½	4
Comparative Physiology I.	5	
Drill		4

SPRING TERM:

Anatomy III	2½	4
Chemistry III	5	4
Histology II	5	2
Comparative Physiology II.	2½	2
Drill		4

Junior.

FALL TERM:

Anatomy IV	2½	6
Pathology I	5	
Bacteriology I	2½	4
Public Speaking I	5	
Materia Medica I	2½	

WINTER TERM:

Anatomy V	2½	6
Bacteriology II	2½	4
Materia Medica II	5	
Medicine I	5	
Surgery I		4

SPRING TERM:

Medicine II	5	
Surgery II	2½	2
Pathology II	2½	4
Rhetoric II	5	
Live Stock I	2½	4

Senior.

FALL TERM:

Live Stock II	2½	4
Medicine III	5	
Civics	5	
Surgery III	2½	
Infectious Diseases	5	
Clinic		2

WINTER TERM:

Medicine IV	5	
American History	5	
Surgery IV	5	4
Pharmacy		4
Physical Diagnosis		4
Clinic		2

SPRING TERM:

Medicine V	5	
Economics	5	
Obstetrics	5	
Dairying	2½	4
Hæmatology		4
Clinic		2
Thesis		–

Graduate.

FALL TERM:

Animal Nutrition	5	
Chemistry IV	5	4
Medicine VI	5	
English Literature	5	
Clinic		–

WINTER TERM:

Embryology	5	4
Zoölogy II	2½	4
Meat Inspection	5	
Sanitary Medicine	5	
Clinic		–

SPRING TERM:

Animal Breeding	5	
Therapeutics	5	
Surgical Anatomy	5	
Operative Surgery		–
Clinic		–

Mechanical Engineering Course.

First culumn of figures shows class hours per week.
Second column shows laboratory or industrial hours per week.

Sophomore.

FALL TERM:

Algebra IV	5	
Descriptive Geometry and Projection Drawing	5	4
Chemistry I	5	4
Blacksmithing II		4
Drill		4

WINTER TERM:

Analytical Geometry	5	
Public Speaking I	5	
Chemistry II	5	4
Mechanical Drawing I		4
Foundry		4
Drill		4

SPRING TERM:

Differential Calculus	5	
Kinematics I	5	
Chemistry III	5	4
Mechanical Drawing II		4
Pattern Making		4
Drill		4

Junior.

FALL TERM:

Integral Calculus	5	
Kinematics II	5	
Physics III (Mechanics)	5	4
Mechanical Drawing III		6
Machine Shop I		4

WINTER TERM:

Rhetoric II	5	
Steam Engineering I (Valve gears)	5	
Physics IV (Light and Electricity)	5	4
Mechanical Drawing IV		6
Machine Shop II		4

SPRING TERM:

Civics	5	
Applied Mechanics I	5	
Physics V (Sound and Heat)	5	4
Mechanical Drawing V		4
Engineering Laboratory I		3
Machine Shop III		4

Senior.

FALL TERM:

American History	5	
Steam Engineering II (Thermodynamics)	5	
Applied Mechanics II	5	
Mechanical Drawing VI		4
Engineering Laboratory II		4
Graphic Statics		3
Machine Shop IV		4

WINTER TERM:

Economics	5	
Steam Engineering III (Boilers)	5	
Applied Mechanics III	5	
Mechanical Drawing VII		4
Mechanical Engineering Laboratory I		6
Machine Shop V		4

SPRING TERM:

English Literature	5	
Steam Engineering IV (Thermodynamics)	5	
Hydraulics	5	
Mechanical Drawing VIII		4
Mechanical Engineering Laboratory II		6
Thesis.		

Graduate.

FALL TERM:

Modern Language I	5	
Electrical Engineering	5	4
Mill and Structural Engineering	5	10

WINTER TERM:

Modern Language II	5	
Power Plant Engineering	5	6
Hydraulics II	5	6
Thesis.		

SPRING TERM:

Modern Language III	5	
Locomotive Engineering	5	8
Contracts and Specifications	3	
Seminar	2	
Thesis.		

Electrical Engineering Course.

First column of figures shows class hours per week.
Second column shows laboratory or industrial hours per week.

Sophomore.

FALL TERM:

Chemistry I	5	4
Descriptive Geometry	5	4
Blacksmithing II		4
Algebra IV	5	
Drill		4

WINTER TERM:

Chemistry II	5	4
Analytical Geometry	5	
Public Speaking I	5	
Foundry		4
Mechanical Drawing I		4
Drill		4

SPRING TERM:

Chemistry III	5	4
Differential Calculus	5	
Kinematics I	5	
Pattern Making		4
Mechanical Drawing II		4
Drill		4

Junior.

FALL TERM:

Integral Calculus	5	
Physics III (Mechanics)	5	4
Rhetoric II	5	
Mechanical Drawing III		6
Machine Shop I		4

WINTER TERM:

Physics IV (Light and Electricity)	5	4
Civics	5	
English Literature	5	
Machine Shop II		4
Mechanical Drawing IV		6

SPRING TERM:

Physics V (Sound and Heat)	5	4
Applied Mechanics I	5	
Electricity	5	4
Machine Shop III		4
Engineering Laboratory I		3

Senior.

FALL TERM:

American History	5	
Direct-current Machines	5	4
Electrical Instruments and Calculation	5	4
Machine Shop IV		4
Thesis		3

WINTER TERM:

Steam Engineering	5	6
Alternating-current Mach	5	4
Economics	5	
Direct-current Design		2
Thesis		3

SPRING TERM:

Hydraulics	5	
Alternating-current Mach	5	4
Alternating-current Design		2
Power Transmission	2½	
Electrical Installation	2½	
Thesis		4

Graduate.

FALL TERM:

Steam Engineering II	5	4
Electric Traction	5	4
Modern Language I	5	

WINTER TERM:

Station Designing	5	4
Electric Lighting	5	4
Modern Language II	5	

SPRING TERM:

Alternating-current Mach. Design	5	4
Contracts and Specifications	2	
Telephony	5	4
Modern Language III	5	

Civil Engineering Course.

First column of figures shows class hours per week.
Second column shows laboratory or industrial hours per week.

Sophomore.

FALL TERM:

Algebra IV	5	
Descriptive Geometry and Projection Drawing	5	4
Chemistry I	5	4
Surveying II		4
Drill		4

WINTER TERM:

Analytical Geometry	5	
Public Speaking I	5	
Chemistry II	5	4
Mechanical Drawing I		4
Surveying III		4
Drill		4

SPRING TERM:

Differential Calculus	5	
Kinematics I	5	
Chemistry III	5	4
Mechanical Drawing II		4
Surveying IV		4
Drill		4

Junior.

FALL TERM:

Integral Calculus	5	
Geodosy	5	
Physics III (Mechanics)	5	4
Mechanical Drawing III		6
Surveying		5

WINTER TERM:

Rhetoric II	5	
Spherical Trigonometry	2½	
Agronomy	2½	
Physics IV (Light and Electricity)	5	4
Civil Engineering Drawing I		6
Surveying		4

SPRING TERM:

Civics	5	
Applied Mechanics I	5	
Physics V (Sound and Heat)	5	4
Civil Engineering Draw. II		4
Engineering Laboratory I		3
Surveying		4

Senior.

FALL TERM:

American History	5	
Geology and Petrography	5	
Applied Mechanics II	5	
Civil Engineering Draw. III		4
Graphic Statics		3
Engineering Laboratory II		4

WINTER TERM:

Economics	5	
Hydraulics I	5	
Applied Mechanics III	5	
Civil Engineering Draw. IV.		6
Civil Engineering Lab		8

SPRING TERM:

English Literature	5	
Structural Engineering I	5	4
Railway and Highway	5	6
Thesis.		

Graduate.

FALL TERM:

Modern Language I	5	
Structural Engineering II (Iron and steel)	5	8
Hydraulics II	5	6

WINTER TERM:

Modern Language II	5	
Steam Engineering	5	6
Municipal Engineering	5	6
Thesis.		

SPRING TERM:

Modern Language III	5	
Structural Engineering III. Concrete and Masonry	5	8
Contracts and Specifications	3	
Seminar	2	
Thesis.		

Architecture Course.

First column of figures shows class hours per week.
Second column shows laboratory or industrial hours per week.

Sophomore.

FALL TERM:		
Chemistry I	5	4
Descriptive Geometry	5	4
Modeling I		4
Algebra IV	5	
Drill		4
WINTER TERM:		
Chemistry II	5	4
Analytical Geometry	5	
Public Speaking I	5	
Perspective I		4
Mechanical Drawing I		4
Drill		4
SPRING TERM:		
Chemistry III	5	4
Differential Calculus	5	
Kinematics I	5	
Modeling II		4
Mechanical Drawing II		4
Drill		4

Junior.

FALL TERM:		
Integral Calculus	5	
Physics III	5	4
Residences	5	4
Elements of Architecture I		6
WINTER TERM:		
Rhetoric II	5	
Physics IV	5	4
Public Buildings	5	4
Elements of Architecture II		6
SPRING TERM:		
Civics	5	
Applied Mechanics I	5	
Physics V	5	4
Perspective II		4
Elements of Architecture III		6

Senior.

FALL TERM:		
American History	5	
Heating and Plumbing	5	
History of Architecture	5	
Graphic Statics		3
Rendering in Water-color		5
Architectural Comp. I		6
WINTER TERM:		
Economics	5	
Specifications, etc	5	
Trusses	5	4
Mural Decoration		4
Architectural Comp. II		6
SPRING TERM:		
English Literature	5	
Seminary	5	
Landscape Architecture	5	4
Architectural Comp. III		6
Thesis		4

Graduate.

FALL TERM:		
Modern Language I	5	
Building Laws	5	
Civic Improvement	5	
Architectural Composition		6
WINTER TERM:		
Modern Language II	5	
Electrical Wiring and Lighting	5	4
Municipal Engineering	5	6
Thesis		4
SPRING TERM:		
Modern Language III	5	
Landscape Gardening	5	
Structural Engineering I	5	4
Architectural Composition		6
Thesis		8

Printing Course.

First column of figures shows class hours per week.
Second column shows laboratory or industrial hours per week.

Sophomore.

FALL TERM:

Chemistry I	5	4
Spelling	5	
Composition I		10
Distribution		4
Machine-shop I		4
Drill		4

WINTER TERM:

Chemistry II	5	4
Public Speaking I	5	
Punctuation	5	
Composition II		8
Drill		4

SPRING TERM:

Chemistry III	5	4
Reportorial Work I	5	
Public Speaking II	5	
Composition III		6
Correcting Proofs		2
Drill		4

Junior.

FALL TERM:

Rhetoric II	5	
Proof-reading I	2½	
Reportorial Work II	5	
Zoölogy I	5	4
Ad. Composition and Distribution		4

WINTER TERM:

English History	5	
Editorial Writing	5	
Proof-reading II	5	
Editing Copy		4
Make-up and Imposition		4
Job Lock-up		2
Job Composition		4

SPRING TERM:

Civics	5	
Bacteriology I	2½	4
Motors	2½	4
Estimating Jobs		2
Job Presswork I		10
Cutting Stock		2

Senior.

FALL TERM:

English Literature I	5	
American History	5	
Job Presswork II		16
Trimming and Tabbing		2
Methods and Management		4
Paper, Rollers and Inks		2

WINTER TERM:

Economics	5	
English Literature II	5	
Psychology	5	
Cylinder Presswork I		16

SPRING TERM:

Philosophy	5	
American Literature	5	
Cylinder Presswork II		16
Thesis	5	

Graduate.

FALL TERM:

Elective	5	
Modern Language I	5	
Tabular Composition		4
Practice Work		10
Ad. Writing		8

WINTER TERM:

Elective	5	
Modern Language II	5	
Color Composition		4
Practice Work		10
Adv. Editorial Work		8

SPRING TERM:

Elective	5	
Modern Language III	5	
Color Presswork		8
Practice Work		10

Domestic Science and Art Course.

First column of figures shows class hours per week.
Second column shows laboratory or industrial hours per week.

Sophomore.

FALL TERM:

Chemistry I	5	4
Zoölogy I	5	4
German I	5	
Color and Design II		4
Physical Training or Music.		4

WINTER TERM:

Chemistry II	5	4
Entomology	5	4
German II	5	
Home Decorations		4
Physical Training or Music.		4

SPRING TERM:

Chemistry III	5	4
German III	5	
Physiology	5	2
Dressmaking		6
Physical Training or Music.		4

Junior.

FALL TERM:

Human Nutrition	5	
Public Speaking I	5	
German IV	5	
Bacteriology I	2½	4

WINTER TERM:

Domestic Science I	5	10
Rhetoric II	5	
Horticulture	5	4

SPRING TERM:

Domestic Science II	5	8
Psychology	5	
Bacteriology II Laboratory.		6
English History	5	

Senior.

FALL TERM:

Civics	5	
English Literature I	5	
Dietetics	2½	6
Elective	5	

WINTER TERM:

English Literature II	5	
Home Management	5	
American History	5	
Elective	5	

SPRING TERM:

Economics	5	
Therapeutic Cookery	2½	4
Home Nursing	2½	
Elective	5	
Thesis.		

Graduate.

FALL TERM:

Elective	5	8
Domestic Science III	5	
Advanced Organic Chemistry	5	6

WINTER TERM:

Elective	5	8
Domestic Science IV	5	
Physiological Chemistry	5	6

SPRING TERM:

Elective	5	8
Domestic Science V	5	
Advanced Bacteriology	5	6

General Science Course.

First column of figures shows class hours per week.
Second column shows laboratory or industrial hours per week.

Sophomore.

FALL TERM:

Chemistry I	5	4
German I	5	
Zoölogy I	5	4
Projection		4
Drill or Physical Training or Music		4

WINTER TERM:

Chemistry II	5	4
German II	5	
Entomology	5	4
Perspective I		4
Drill or Physical Training or Music		4

SPRING TERM:

Chemistry III	5	4
German III	5	
Bacteriology I	2½	4
Zoölogy II	2½	4
Drill or Physical Training or Music		4

Junior.

FALL TERM:

Public Speaking I	5	
Physiology	5	2
Elective	5	12

WINTER TERM:

English History	5	
Geology	5	
Elective	5	12

SPRING TERM:

Civics	5	
Rhetoric II	5	
Elective	5	12

Senior.

FALL TERM:

American History	5	
English Literature I	5	
Elective	5	12

WINTER TERM:

Psychology	5	
English Literature II	5	
Elective	5	12

SPRING TERM:

Economics	5	
Philosophy	5	
Elective	5	12

THE INDUSTRIALIST

Historical Society

Vol. 34 **No. 30**

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

The Industrialist.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

TERMS AND VACATIONS.

FALL TERM, 1907, THIRTEEN WEEKS.

Thursday, Friday, and Saturday, November 28, 29, and 30.....Thanksgiving vacation
Thursday and Friday, December 19, 20.....Examination at close of term

WINTER TERM, 1908, TWELVE WEEKS.

Monday, January 6.....Examination for admission, at nine A. M.
Tuesday, January 7.....Winter term begins
Tuesday, January 7.....Short courses in agriculture and dairying begin
Saturday, February 1.....Annual intersociety oratorical contest
Saturday, February 15.....Mid-term examination
Thursday, March 19.....Annual concert
Thursday and Friday, March 26, 27.....Examination at close of term

SPRING TERM, 1908, ELEVEN WEEKS.

Monday, March 30.....Examination for admission, at nine A. M.
Tuesday, March 31.....Spring term begins
Saturday, May 9.....Mid-term examination
Tuesday, May 19.....Beginning of summer course in domestic science
Tuesday and Wednesday, June 16, 17.....Examination at close of year
June 14 to 18.....Exercises of Commencement week
Thursday, June 18, at ten A. M.....Commencement
June 19 to September 16.....Summer vacation

FALL TERM, 1908,

Wednesday, September 16.....Examination for admission, at nine A. M.
Thursday, September 17.....College year begins

BOARD OF REGENTS.

HON. A. M. STORY, President.....Manhattan
HON. J. O. TULLOSS ['99], Vice-President.....Sedan
HON. J. S. MCDOWELL.....Smith Center
HON. GEO. P. GRIFFITH.....Hays
HON. EDWIN TAYLOR.....Edwardsville
HON. W. E. BLACKBURN.....Anthony
PRES. E. R. NICHOLS, Secretary *ex-officio*.....Manhattan

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
CHARLES WM. BURKETT, M.Sc (Ohio State University).....Director Experiment Station
JOHN D. WALTERS, M.S. (K.S.A.C.).....Professor of Architecture and Drawing
JULIUS T. WILLARD, M.S. (K.S.A.C.)....Professor of Chemistry, Vice-Director Exp. Station
BENJ. L. REMICK, Ph.M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K.S.A.C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph.M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M.S. (K.S.A.C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph.D. (Univ. of City of New York)....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B.S. (K.S.A.C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College).....Professor of Economics
JOHN V. CORTELYOU, A.M. (Uni. of Neb.), Ph.D. (Heidelberg).....Professor of German
OLOF VALLEY, B.M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D.V.S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B.S.A. (Iowa State College).....Professor of Animal Husbandry
WALTER E. KING, M.S. (Cornell).....Professor of Bacteriology
THOMAS J. HEADLEE, Ph.D. (Cornell).....Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U.S.A.....Professor of Military Science
JOHN C. KENDALL, B.S. (N.H.A. & M.).....Professor of Dairy Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art
MISS ANNE M. BOYD, A.B., Lib. Sci. (Millikin).....Librarian
ROBERT J. BARNETT, B.S. (K.S.A.C.).....Principal Preparatory Department

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., MAY 2, 1908. No. 30

A Course in Printing.

For some time it has been apparent that a broader education of the printing craft is needed. People are awakening to an appreciation of what is truly artistic and beautiful, and there is a growing demand for a higher class of printing. Notwithstanding this demand, the opportunity for the apprentice is less to-day than ever before.

The average printing-office does not provide a thorough training for the apprentice; nor does it give the young man an education such as a printer needs. Unless he be given a chance to supplement his composing-room instruction with art he will remain a mere mechanical tool. His instruction in the press-room should be supplemented with work in the machine-shops and the handling of gasoline engines and electric motors. The day when the "learning of the trade" was all that was necessary is passed. The successful printer of to-day must have a broader knowledge than is obtained through a routine of every-day work.

The all-around printer is becoming a thing of the past. Men who are capable of "running" a country newspaper are growing scarcer every day. The country newspaper man should be a compositor, a job printer, a good "stone" man, a pressman—in fact, should be an all-around man—not so much to do the work himself as to know when it is properly done and to be able to intelligently and profitably direct those in his employ.

The capable superintendent of the larger job and book offices should understand all the work under his care. Of this Mr. Frederick F. Turner, in *Practical Printer* for January last, says:

"The printing industry in its mechanical departments is athirst for men above the average ability—men who are able to take charge of or to fill commanding positions. It is the complaint of many employers that applications are received from those who, being out of work, verbally impress the employer with their apparent ability, and who know that if they do not make good they have little to lose, but who in most cases are found to be sadly wanting when tried. The particularly distressing feature of it all

is that so many applicants for these positions seem to be specialists—good at one certain branch of their calling, but totally lacking the general ability that is first of all required of an executive. In a word, they seem not to understand or else to ignore the requirements of such a position. One applicant blandly told a proprietor that if he could not do the work he would do as did Andrew Carnegie—surround himself with men who could. The astonished employer made answer that he wanted a bell-wether to lead the sheep, not sheep to lead the bell-wether. This answer was pointed and rightly put when we consider that, although there may be several right ways of doing a certain piece of work, every office has, or should have, one right way for doing one thing. The employes must be taught this way and the executive must teach them.

"The executive must be a practical man. Executive, mechanical and artistic abilities are essential, but one quality without the other is insufficient. He must be sufficiently mechanical, practical and artistic to see a job of printing to a successful conclusion, from envelope corner to catalogue, and from estimating to delivery, and to do it himself if need be. This includes a knowledge of presswork, of proof-reading, of paper stock, weights and sizes, and he must be conversant with the working methods of binder, electrotyper, and photoengraver.

"A broad intelligence, an observing eye, a desire to excel, the love for doing and seeing good work, the ambition to work and study after working hours, are requisites to success, and one must start young. The realization of how much one has still to learn will come later on—when one has grown gray."

Lewis Ransome Fiske says: "Whatever be the field in which men are at work, they depend on the press to carry forward their projects. Science thereby records her discoveries; industrial pursuits find in this a treasury of knowledge and a guide to success. Without it the schools would languish and die. Political parties do their largest work through the printed page, putting their appeals before the eye of every voter from one end of the land to the other. Every interest of the race wields the press as an arm of power. We can scarcely conceive what we would be had the printing-press never come into being. All forms of power depend on it, and every life is moulded through its agency."

The four-year course recently adopted by the Board of Regents of the Kansas State Agricultural College is intended to give a broadening education with a practical knowledge of the trade. The College maintains and operates a well-equipped

printing-office. The equipment consists of a Babcock Optimus, two Chandler & Price Gordons, perforator, stitcher, and other modern machines, all run by electric power; a large assortment of job faces, all in series and in cabinets, and enough body type to keep three stated publications going, besides the numerous pamphlets, bulletins, etc., constantly on hand.

Students in this course will receive instruction in the every-day work of the office, and this will be supplemented by class-room work in scientific, biologic and cultural studies, intended to broaden the intellect and sharpen the appetite for that higher knowledge which always brings its reward financially as well as intellectually. There will be no theoretical work—all practical.

The entrance requirements to this course are the same as to any of the other four-year courses, which, in addition to the common-school branches, includes one term each of advanced grammar, English readings, English composition, three terms of algebra; one term each of ancient, medieval and modern history; bookkeeping, and two terms of botany.

All of the preparatory and first-year studies are taught each term, and nearly all of the second-year subjects; so that a person may enter at the beginning of any term and find work suited to his advancement.

TUITION IS FREE. An incidental fee of $3 per term will be charged all students from Kansas. Students from outside of Kansas will be charged an incidental fee of $10 per term, and an enrolment fee of $10. Each student must present receipt for incidental fee before enrolment in classes. Rooms, board and washing are not furnished by the College. Board, with furnished room, can be procured in private families at $3.00 to $4.50 per week, or table board in student clubs from $2.50 to $3.00 per week. Furnished rooms, without board, can be obtained at from $3 to $8 per month Some students board themselves at even less cost, and rooms for the purpose can be obtained at a rent of from $1 to $3.50 per month. Washing costs from 50 cents to 75 cents per dozen. Books cost about $3 per term. Young men of the freshman and sophomore years will be required to have military uniforms costing about $16, and the young women of the freshman year must have a physical-training suit costing about $4. Ordinary expenditures, aside from clothing and traveling expenses, range from $150 to $250 per year.

It is not expected that at graduation a student will be an expert in any line, but he will have a broad foundation upon which to build, and will be far better able to cope with the problems of life

than would be possible otherwise. The course leads to the degree of Bachelor of Science, and when the graduate goes out with a well-balanced education and a technical training such as he shall have received he will find little difficulty in reaching the height of his ambitions if he follows the motto of our State, "To the Stars Through Difficulties." Those wishing to specialize in any branch of the technical work of the course may take the graduate or fifth year, which includes German or Spanish, and carries with it a special degree.

J. D. RICKMAN.

A Correspondence Course.

The Farmers' Short Course is not intended to offer anything like a complete agricultural education. It is what the name implies, a short course, and is intended primarily for young men whose circumstances will not allow them to take any regular four-year course. However, every course ought to incite to future study. It is the desire of the College to help these young men in advanced reading of agricultural literature and to aid them in carrying out certain demonstrations in scientific agriculture. This is the first attempt to aid in the study of a book. Hunt's "Cereals in America" was chosen because it is in the regular four-year course, and because it is a valuable work for any farmer to study. It is hoped that the short-course men who undertake this work will be helped both in matter and method. Other subjects may be offered next year. The book may be ordered from the Coöperative Bookstore, Manhattan; mailing price, $1.55.

The following is Question List No. 1, an outline of instruction for the study of wheat, prepared by the Agronomy Department:

1. What is the meaning of the three terms, Agriculture, Horticulture, and Agronomy?

2. What are the different classes of field crops and what relative Agricultural importance has each? Note the distribution in the United States and area grown. (See U. S. Year Book.)

3. In Plant Breeding, the individual plant is the result of what two forces?

4. Of what importance is plant breeding to Agriculture?

5. What circumstances have prevented the application of the principles of breeding to plants?

6. Explain the relation and effects of crossing and selection on crop improvement.

7. To what botanical family does wheat belong? What are the characteristics of plants belonging to this family?

8. Explain the root system of the wheat plant.

9. Name and explain the parts which constitute the true flower of the wheat?

10. What is the meaning of the following terms: spike, spikelet, rachis, rachilla? (See some good treatise, such as Gray's Botany.)

11. What four chief factors affect the yield of wheat, considering only the grain?

12. From what part of the grain is the flour obtained? the bran, the shorts, the middlings?

13. Name and give percentage of different portions of the wheat grain.

14. Compare the composition of hard wheat with soft wheat.

15. Which of these two kinds of wheat makes the better bread? Why?

16. What is the composition of the wheat grain and wheat straw?

17. What different compounds are found in the ash of the grain and straw of wheat?

18. What five proteids make up the nitrogenous compounds of wheat? Which two go to make up the gluten? How do these differ in character? What relation does the gluten have to good flour and good bread?

19. What relation has the weight per bushel to the nitrogenous content of wheat?

20. What influence does the season have on the yield of wheat? On the quality? What influence do fertilizers have on the yield of wheat? On the quality?

21. In what three ways may environment influence the crop of grain?

22. What are the minimum and maximum temperatures at which wheat will germinate? Which is the most favorable temperature?

23. What are the characters of the plants which belong to the wheat genus?

24. Name the eight cultivated types of wheat. What is the common name for each type?

25. Which of the above types of wheat have both spring and winter varieties?

26. Name some of the characteristics which may be taken to constitute a variety difference in wheat.

27. In what eight groups might the different varieties of common wheat be divided? What three external characteristics determine these eight groups?

28. What are some of the desirable qualities to be obtained in the wheat?

29. How many classes of wheat are recognized by the markets of the country?

30. Give characteristics of the above classes of wheat.

31. Compare the soft winter varieties with the hard winter varieties.

32. How do the hard winter wheats compare with the hard spring wheats in yield?

33. What are the sources of the three varieties of wheat in this country?

34. From what countries were some of the valuable foreign varieties introduced?

35. What improvement has been made by selection of varieties?

36. What improvement has been made by crossing varieties?

37. How is it possible for cross fertilization to take place between flowers of the wheat plants?

38. How does cross fertilization affect the offspring of the wheat plant? Outline practical method for improving wheat by breeding.

39. Upon what six conditions does the successful growing of wheat depend?

40. What effect does climate have upon the geographical distribution of wheat?

41. In what way will the climate affect the physical characteristics of wheat?

42. How will the growth of the wheat be affected by the climate?

43. During what stages of growth does wheat take up the greater portions of its food? Compare the accumulation of these constituents in the soil at different stages of growth.

44. Wheat is liable to winter-kill in what two ways?

45. Does the character of the soil affect the yield as much as it may the quality of the wheat? Within what latitudes does the wheat belt lie?

46. What two types of drift soil are recognized as being generally adapted to wheat? What are the characteristics of each?

47. What effect does the change of soil have on the yield of wheat?

48. To what extent will the use of fertilizers increase the yield of wheat? On what kind of land will they bring the best returns?

49. What two methods are practiced in adding plant-food to the soil for wheat? Describe each method. Note results.

50. What are the chief benefits derived from a crop rotation?

51. What crops should always be included in a rotation?

52. Outline a good 8-year rotation on eight fields, including wheat.

53. What effect do the various fertilizing constituents have on the yield of wheat?

54. What is understood by a standard application of fertilizer?

55. In what form is lime applied to wheat land? How many pounds per acre should be applied?

56. What is the most desirable time to apply these commercial fertilizers?

57. What are the different methods of applying commercial fertilizers?

58. In what manner is the farm manure best applied to wheat land? How much should be applied per acre?

59. What materials are used for mulching wheat? Explain the effect of mulch on wheat ground.

60. How does mulching wheat differ from placing a top dressing of manure on the ground?

61. What is the most desirable time of the year to plow for winter wheat? Why?

62. What is the average depth to plow for wheat? Explain how the character of the soil should vary the depth to plow for wheat.

63. How is the seed-bed prepared for wheat where the land is not plowed?

64. The time of sowing wheat may depend upon what six factors? Explain each factor.

65. The depth of sowing wheat may vary with what four conditions? Explain each condition.

66. Compare the yields of wheat drilled in with wheat sown broadcast.

67. What reasons may be given why the practice of drilling is more desirable than sowing broadcast?

68. What conditions would vary the quantity of seed to sow per acre? Explain each effect.

69. In what way will the size of the seed kernel affect the yield of wheat?

70. Explain the method of treating and grading wheat before it is planted.

71. What are the three general forms of wheat drills? Compare the three forms for soil adaptation, draft, and good work.

72. Has the cultivation of wheat in rows been practiced to any extent in this country? Describe an ideal seed-bed for wheat.

73. Name five bad varieties of weeds that occur in wheat fields? How does each affect the crop? How may these weeds be eradicated?

74. What are the four important fungus diseases of wheat? How do they damage the crop?

75. Describe the five chief insect enemies of growing wheat? Are there any remedies for the eradication of these insects? If so, what?

76. What should be the condition of the wheat when it is ready to harvest?

77. How does the stage of maturity of wheat affect the yield?

78. Explain the influence of ripening upon the composition of the wheat?

79. What effect does prompt shocking and capping have on the grain? What method should be followed in shocking wheat?

80. What are the four types of power machines used for harvesting wheat? Describe each briefly.

81. What important factors should be considered in the storing of wheat?

82. Discuss the various uses of wheat.

83. Has wheat been used to any extent as a food for domestic animals? What results have been obtained?

84. Compare the three grades of flour produced by the rolling process of milling.

85. In what respects does graham flour differ from the patent flour? What part of the grain goes to make up the graham flour?

86. What are the three types of machinery for producing flour?

87. What two steps have been added to the process of milling by the introduction of the middlings purifier? What is the object of this purifier?

88. From what portions of the grain are the by-products of wheat produced? Name and describe the different grades of by-products.

89. Compare the composition of the by-products of wheat.

90. Discuss the feeding value of these by-products as stock feeds.

91. Compare the wheat crop of the United States with that of other countries.

92. What progress has been made along the line of wheat production?

93. In what states is most of the spring wheat raised? Compare the yield of spring and winter wheat.

94. How much of the wheat in the United States is made into flour? Which state produces the largest amount of flour?

95. Compare the average yield per acre of wheat in the United States with that of the different nations.

96. Discuss the export of wheat and flour of the world. How much of this total production was produced by the United States?

97. What are the different commercial grades of wheat as maintained by the system of inspection?

98. Discuss briefly the history of wheat.

99. What varieties are best adapted for growing in Kansas? What has been the average yield of wheat for the past five years in the United States? In Kansas?

100. Outline a general plan of wheat culture adapted to your locality and conditions.

This course may be taken by any one who will secure the text book and agree to study the same, but credit on College work will be given to former students of the Kansas State Agricultural College and to no others.

All correspondence relating to this work should be addressed to J. H. MILLER, Superintendent Agricultural College Extension, Manhattan, Kansas.

Corn Cultivation Day.

If the weather remains favorable, practically all Kansas farmers will have finished planting corn by May 9, and the Farmers' Institute Department, Kansas State Agricultural College, suggests that all farmers' institutes in Kansas take two hours, 2 to 4, Saturday afternoon, May 9, for the discussion of "Corn Cultivation." This will be the last meeting until October, and the subject the most important and timely that could be considered by Kansas farmers.

There are now 191 regularly organized farmers' institutes in Kansas—100 county organizations and 91 local institutes. It is hoped that every county president will also arrange for several special meetings on May 9, at villages and towns where there are no local organizations.

The subject might well be discussed along the lines following: "First Cultivations," "How Many Cultivations," "Deep or Shallow Cultivation," "Two-row Cultivators," "Number of Shovels," "Advantages and Dangers of Late Cultivation," "Breaking Middles in August." The ground has been prepared, the seed selected and will be planted by May 9, hence cultivation is the one great question, the only method now open to farmers whereby they may help to change the State record from twenty-two bushels per acre.

Why not have a meeting on May 9 at every trading point in Kansas? Why not have 500 "Corn Cultivation" meetings on that day? Requests have been sent out to the officers of 191 institutes, and it is hoped that every farmer in Kansas will talk "Corn Cultivation" on May 9 at one of these 500 "experience meetings."

Local Notes.

Mid-term examinations on Saturday, May 9.

Professor Dickens will address a good-roads meeting at Topeka to-day.

On May 4 the College will cross bats in the St. Mary's arena with the college of that burg.

College team No. 2 defeated the Chapman team, 6 to 2, on the Chapman field Saturday of last week.

Professor McKeever will deliver a commencement address at Atchison on May 18, and at Clifton on May 23.

The Military Department has just received a consignment of new rifles from the United States War Department.

The President's office is being remodeled. A hard-wood floor is being put in and the walls are being given a water-color finish.

The tin roof of the new Domestic Science and Art Hall is nearly completed, and several of the rooms are plastered and ready for the painter.

The Horticultural Department recently presented a box of trees and shrubs to the Industrial and Educational Institute, of Topeka, otherwise known as "The Western Tuskegee."

The work of spraying the fruit-trees for various insect pests and fungus diseases has begun. A spray composed of three parts Bordeaux mixture, three parts arsenate of lead and fifty parts water is being used, this mixture being both an insecticide and a fungicide.

The Horticultural Department has recently purchased three tons of fertilizer, and will carry on extensive experiments in determining the relative value of different fertilizers. For this purpose the department has planted six acres of Irish potatoes, and arrangements are being made with local growers to carry on coöperative experiments with fertilizers on sweet potatoes.

Contractor Geo. Hopper has commenced the removal of the water-tower which, on account of the erection of the new Veterinary Science Hall directly north of it, is sorely in the wrong place. It will be moved about two hundred feet farther west or southwest. Mr. Hopper thinks that he can move the structure intact, steel skeleton, water-tank and all, and expects to complete the whole job in a week or ten days after uncoupling the water pipes.

The College branch of the American Institute of Electrical Engineers will meet next Tuesday evening, May 5, in room C 60. Program as follows: "Primary Standards of Light," A. W. Kirby; "The Tantalum Lamp," Guy Rexroad; "The Nernst Lamp," W. C. Lane; "The Flaming Arc Lamp," S. S. Young; "Mercury Arc Rectifier," K. H. Logan; "Tungsten Lamps in Street Illumination," W. E. Sweezey, of Junction City. All who are interested are invited to attend.

Asst. Prof. Geo. A. Dean will begin the erection of a fine residence as soon as he can find a contractor. The building will be located on Juliette Avenue, near the high-school building. The plans describe a very handsome two-story building, well arranged, finished in white oak, and modern in every respect.

May 19 is the date of the beginning of the new summer course in agriculture and the teachers' course in domestic science. The former has been organized for those who wish to teach agriculture in the public schools and the latter for young women who intend to teach domestic science in high schools and manual training schools. The courses of study will be found in the last INDUSTRIALIST.

The State Federation of Women's Clubs will meet here in May. President Nichols will give one of the addresses of welcome and also speak on "The Agricultural College." Prof. J. E. Kammeyer will talk on "Some Municipal Ideals," and Prof. Henrietta Calvin will give a demonstration and lecture. A picked chorus will render "The Spring Chorus," from "The Flying Dutchman."—*Republic.*

The lecture course committee has elected officers for the ensuing year as follows: Chairman, A. G. Kittell; secretary, Elsie Kammeyer; treasurer, D. E. Lewis. The following course for the season of '08-'09 was chosen: Vassar Girls. Gov. John A. Johnson, of Minnesota. Whitney Bros. Male Quartet. Strickland W. Gillilan of the Chicago *News.* Edward Amherst Ott. Elma B. Smith Company. Ralph Bingham. Frederic Warde, Shakespearian scholar. Frank Dixon. Shilkredt's Hungarian Orchestra.

President Nichols and the members of the Board of Regents attended the "peace conference" of the three higher institutions of learning in Kansas last Tuesday afternoon, at Topeka. They report a successful and harmonious meeting and, though the work which it started out to do was not finished, making other meetings necessary later in the year, they think that much good will result. The daily press has reported the proceedings quite correctly and fully, and the INDUSTRIALIST can add but little to what was said. Governor Hoch's committee suggestions, which were adopted by the conference, were as follows: "I wish we might have another and more formal meeting some time this summer or early fall, and as a preparation for such a meeting I suggest the selection by you, to-day, of a committee of lawyers, one from the regency of each institution, to consider the legal status of the subject and to suggest such changes, if any are desirable, in the law governing these institutions. I also suggest the appointment of another committee, or committees, to consider the question of whether any changes in the present system of management of the institutions are desirable, and also the whole question of the educational sphere of each institution, and the limitation, if any, to be put upon the course of study in each, that there be no departure by any from its own proper sphere, and to present for consideration at the next meeting such plans and recommendations as they may deem wise and practicable."

Eighteen seniors and juniors in electrical engineering, accompanied by Professor Eyer, visited the electric-light and power plants in Fort Riley and Junction City on Saturday of last week. In order to combine the agreeable with the useful they walked from Manhattan to the Fort afoot, a distance of eighteen miles, rode from there to Junction City on the electric street railway and returned by way of U. P. R. R. in the afternoon. The students report that Professor Eyer was well at the head of the procession both going and coming, and that he was ready for a two-mile foot-race with any member of the class when they alighted at home. The power-plant engineers at the Fort and at Junction treated them well.

Alumni and Former Students.

Margaret Irene is the name of the little daughter who came to the home of Dovie (Ulrich) Boys, '03, and W. A. Boys, '04, at Goodland, Kan., on April 17.

Born, March 20, at Delavan, Kan., to Josephine (Wilder) McCullough and Doctor McCullough, both of the class of '98, a son who will be known as George Carter.

S. R. Vincent, '94, Deer Creek, Okla., was much interested in a visit to the College this week. He is doing well on his farm, but is considering locating in Manhattan.

Minnie L. Copeland, '98, after a pleasant winter in Arizona, is now located in Herington, Kan., where she is office nurse and surgical assistant to Dr. Schuyler Nichols, '98.

May Secrest, '92, director of domestic science in the California Polytechnic School, San Luis Obispo, is one of the faculty of the University of California for the summer session of that institution. She will give instruction in foods and home sanitation.

Prof. E. O. Sisson, '86, plans to spend the coming summer at Harvard, where he is to give a series of lectures. Doctor Sisson is one of the ablest professors of a very able faculty in the University of Washington, located in the outskirts of the city.—*Alumnus.*

Changes of address: E. C. Thayer, '91, Box 1059, Helena, Mont.; J. E. Thackrey, '93, corner Flora and Sutton, Maplewood, Mo.; E. C. Gardner, '04, 3241 Prairie Avenue, Chicago, Ill.; J. U. Higinbotham, '86, Washington Boulevard and Morgan, Chicago, Ill.; L. V. White, '03, Chillicothe, Ill.; R. L. Hamaker, '06, 802 Franklin street, Wilmington, Del.; A. N. H. Beeman, '05, 1217 Virginia street, Kansas City, Mo.

Arthur Helder, '04, who has been taking some work in landscape architecture at the College, has accepted a position as secretary of the city park commission, Kansas City, Mo. He will have direct charge of the work in landscape-gardening and the advantage of working with Geo. E. Kessler, landscape architect and civil engineer for the park board of Kansas City, Mo., and Kansas City, Kan. Mr. Helder assumes the duties of his new position the first of April.—*Alumnus.*

R. S. Reed, '92, one of the members of the Simpson Milling Company, Simpson, Kan., visited the institution while on his way to Kansas City on a business trip. He has visited the College but once since his graduation and finds the greater part of the institution new to him.

It will be remembered that three or four years ago a book appeared entitled "Three Weeks in Europe," which was the production of John U. Higinbotham, '86, the illustrations being made from photographs taken by himself. There now appears "Three Weeks in Holland and Belgium," which, like its predecessor, handles its subject in a light and interesting manner and from the standpoint of the ordinary traveler. The vein of humor for which Mr. Higinbotham was noted in his College days enlivens the pages of these books. They are entertaining reading to all. Those who have not seen Europe will wish to all the more after reading them, and those who have been there will recognize the faithfulness of the pictures presented by word and camera. The publishers now announce a "Three Weeks Abroad" series, and Mr. Higinbotham is soon to leave for a vacation in England, where he will utilize his time in coaching through the country, and next year a new book will canvass this interesting trip. Many will wish that they might be with Mr. Higinbotham on the coach.

The fourth annual banquet of the K. S. A. C. Alumni Association of Chicago was held at the Hamilton Club Saturday evening, April 11. A reception was held the first part of the evening; old friends and classmates became once more acquainted. After a six-course dinner was served all sat around the banquet table and listened to a most interesting program. The toast-master of the evening was C. E. Freeman, '89. Elmer House played "The Palms" on a French Horn, which was well rendered and highly enjoyed. D. H. Otis, '92, gave a fine talk on "Kansas to the Front," and Miss Jessie Sweet, '05, sang "Shadows," which was thoroughly enjoyed by all. "Incidents and Accidents," by E. C. Gardner, '04, brought back the pranks of College days. "The Serenade," by Mabel Crump McCauley, '97, was beautifully sung. We are happy to see that Mrs. McCauley is rapidly coming to the front in the musical world. Miss Jane Chapin Tunnel, '89, gave us a little original work on "Who's Who and Why," which was most enjoyable. Mary (Lyman) Otis, '94, sang "Dainty Dorothea" in her usual dainty and sweet voice. Samuel Wendell Williston, '72, talked on "The K. S. A. C. of the Future." He gave us a brief history of our College from the time it was on Bluemont. We are always glad to hear from Professor Williston. We were all glad to hear again the voice of Ione (Dewey) Sutherland, '93, who sang "My Ain Folk." It was given in a most charming manner. Mrs. Sutherland has recently been studying in Boston. At the close of the program "Auld Lang Syne" was sung by all. After a brief business session and a flashlight picture taken by Grant Dewey, '93, we departed for our homes declaring this had been a most enjoyable evening.—*Nationalist.*

Board of Instruction (concluded).

JACOB LUND, M. S. (K. S. A. C.) ..... Superintendent Heat and Power Department
JOHN H. MILLER, A. M. ..... Superintendent Farmers' Institutes
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.) ..... Secretary
CLARENCE L. BARNES, D. V. M. (Cornell) ..... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B. S. (Chicago) ..... Assistant Professor of Physics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.) ..... Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard) ..... Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.) ..... Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.) ..... Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K. S. A. C.) ..... Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago) ..... Assistant Professor of Mathematics

---

Miss Ada Rice, B. S. (K. S. A. C.) ..... Instructor in English
Miss Ella Weeks, A. B. (U. of K.) ..... Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount) ..... Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University) ..... Instructor in Veterinary Science
Robert E. Eastman, M. S. (Cornell University) ..... Instructor in Horticulture
Miss Ula M. Dow, B. S. (K. S. A. C.) ..... Instructor in Domestic Science
Theo. H. Scheffer, A. M. (Cornell University) ..... Instructor in Zoölogy
Herbert H. King, M. A. (Ewing College) ..... Instructor in Chemistry
John B. Whelan, B. S. (Nebraska) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Miss Gertrude Barnes ..... Assistant Librarian
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.) ..... Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.) ..... Foreman of Foundry
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C.) ..... Assistant in Printing
Roy A. Seaton, B. S. (K. S. A. C.) ..... Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College) ..... Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale) ..... Assistant in Architecture and Drawing
Chas. Yost ..... Assistant in Heat and Power Department
Earle B. Milliard ..... Foreman of Blacksmithing
J. T. Parker ..... Assistant in Woodwork
J. D. Magee, A. M. (Chicago) ..... Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit) ..... Assistant in German
Miss Florence S. Latimer, B. M. (Ferry Hall Seminary) ..... Assistant in Music
Miss Marjorie Russell (Mechanics' Institute ..... Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.) ..... Assistant in Botany
Burton Rogers, D. V. M. (Iowa State College) ..... Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal) ..... Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.) ..... Assistant Chemist, Experiment Station
Edw. C. Crowley, Ph. B. (Yale) ..... Assistant in Chemistry
Hugh Oliver ..... Assistant in Heat and Power Department
Miss Charlaine Furley, B. A. (Fairmount) ..... Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (U. of K.) ..... Assistant in Preparatory Department
Leland E. Call, B. S. (Ohio State University) ..... Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University) ..... Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.) ..... Assistant in English
William C. Lane, B. S. (K. S. A. C.) ..... Assistant in Physics
Louis H. Beall, A. B. (Denison) ..... Assistant in English
Miss Flora C. Knight, A. B. (Uni. of Wyoming) ..... Assistant in English
Miss Grace H. Woodward (Boston School of D. S.) ..... Assistant in Domestic Science
Miss Nellie Cave ..... Assistant in Music
Miss Anna I. McKirahan ..... Assistant in Music
Miss Margaret Mack (K. S. N.) ..... Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.) ..... Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.) ..... Assistant in Botany
Charles E. Bassler, D. V. M. (K. S. A. C.) ..... Assistant in Veterinary Science
Miss Mary W. Hancock (Mechanics' Inst.) ..... Assistant in Domestic Art
S. W. McGarrah, A. M. (Grove City College) ..... Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.) ..... Assistant in Animal Husbandry
Arthur L. Peck, B. S. (Mass. Ag. Coll.) ..... Assistant in Horticulture
Kirk H. Logan, B. S. (U. of K.) ..... Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College) ..... Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University) ..... Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College) ..... Assistant in Preparatory Department
Loren Clark ..... Assistant in Printing
Miss Bertha M. Johnston (Simmons College) ..... Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.) ..... Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University) ..... Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.) ..... Assistant in Agronomy
Earle Brintnall, B. S. (Iowa State College) ..... Assistant in Dairy Husbandry
William Neill ..... Dairy Herdsman
G. A. Porteous ..... Herdsman
Wm. A. Lamb ..... Poultryman
Floyd Howard ..... Farm Foreman
William R. Lewis ..... Custodian

Historical Society

THE INDUSTRIALIST

Vol. 34 **No. 31**

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

The Industrialist.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

TERMS AND VACATIONS.

FALL TERM, 1907, THIRTEEN WEEKS.

Thursday, Friday, and Saturday, November 28, 29, and 30.....Thanksgiving vacation
Thursday and Friday, December 19, 20.....Examination at close of term

WINTER TERM, 1908, TWELVE WEEKS.

Monday, January 6.....Examination for admission, at nine A. M.
Tuesday, January 7.....Winter term begins
Tuesday, January 7.....Short courses in agriculture and dairying begin
Saturday, February 1.....Annual intersociety oratorical contest
Saturday, February 15.....Mid-term examination
Thursday, March 19.....Annual concert
Thursday and Friday, March 26, 27.....Examination at close of term

SPRING TERM, 1908, ELEVEN WEEKS.

Monday, March 30.....Examination for admission, at nine A. M.
Tuesday, March 31.....Spring term begins
Saturday, May 9.....Mid-term examination
Tuesday, May 19.....Beginning of summer course in domestic science
Tuesday and Wednesday, June 16, 17.....Examination at close of year
June 14 to 18.....Exercises of Commencement week
Thursday, June 18, at ten A. M.....Commencement
June 19 to September 16.....Summer vacation

FALL TERM, 1908,

Wednesday, September 16.....Examination for admission, at nine A. M.
Thursday, September 17.....College year begins

BOARD OF REGENTS.

HON. A. M. STORY, President.....Manhattan
HON. J. O. TULLOSS ['99], Vice-President.....Sedan
HON. J. S. MCDOWELL.....Smith Center
HON. GEO. P. GRIFFITH.....Hays
HON. EDWIN TAYLOR.....Edwardsville
HON. W. E. BLACKBURN.....Anthony
PRES. E. R. NICHOLS, Secretary *ex-officio*.....Manhattan

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
CHARLES WM. BURKETT, M. Sc. (Ohio State University).....Director Experiment Station
JOHN D. WALTERS, M. S. (K. S. A. C.).....Professor of Architecture and Drawing
JULIUS T. WILLARD, M. S. (K. S. A. C.).....Professor of Chemistry, Vice-Director Exp. Station
BENJ. L. REMICK, Ph. M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B. S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M. S. (K. S. A. C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph. M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S. B. (Mass. Inst. Tech.). Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M. S. (K. S. A. C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph.D. (Univ. of City of New York).....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B. S. (K. S. A. C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College).....Professor of Economics
JOHN V. CORTELYOU, A.M. (Uni. of Neb.), Ph.D. (Heidelberg).....Professor of German
OLOF VALLEY, B. M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D. V. S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B. S. A. (Iowa State College).....Professor of Animal Husbandry
WALTER E. KING, M. S. (Cornell).....Professor of Bacteriology
THOMAS J. HEADLEE, Ph.D. (Cornell).....Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U. S. A.....Professor of Military Science
JOHN C. KENDALL, B. S. (N. H. A. & M.).....Professor of Dairy Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art
MISS ANNE M. BOYD, A.B., Lib. Sci. (Millikin).....Librarian
ROBERT J. BARNETT, B. S. (K. S. A. C.).....Principal Preparatory Department

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., MAY 9, 1908. No. 31

How Are We to Save the Country School?

The rural school is in danger; it is likely to be lost unless rescue of some effective sort comes at once. But, are you ready to say that this institution, so effective in the past, shall disappear; that the old buildings shall be torn down, the old bell be carried away, the few much-used books in the little old library be scattered; that the hallowed ground even on which the school now stands shall go to corn and wheat? Shall the school go? And I hear ten thousand voices say, No! No! the rural school must not go; small, weak schools may be consolidated, one may take the place of two or three or four poor, little ones, but the rural school as an institution of country people must stay.

And why? I doubt if I can say just why none of us want to see the old school destroyed; maybe it is because words are not quite adequate to explain. Most deep-seated of all reasons against the abandonment of the little country school is the feeling that, with its going, something of vital importance would go out of the community; something of great moment out of the life of the country.

It is urged that rural schools be given up because they are inadequate; they fail when compared with the city graded school. Granted they do when measured with the standard of the city school. But you must remember that city standards are not country standards; hence the rural school must not be made to ape the city school. Just what is the real aim of the school, of education? To fit the child to the environments in which he shall live, to make his life a success. Life is the real essential of the school; education is only the means, but life, right living, is the end.

Measure your rural school with this standard and may be you will find the trouble. The trouble is: to-day you find a different set of essentials. You ask the teacher and she enumerates a lot of essentials. In her mind there has developed a notion that certain studies form the essentials of education. You ask one teacher and she places arithmetic as first in importance; another teacher places reading; another teacher places writing above all others;

and still others, as each one's aptitude has evolved, choose other studies as first in rank. But not one of these falls into the class of essentials. They are means, only, whereby the real, true object is obtained. Need I sight illustration after illustration to show that some of the best minds, the best-trained intellects, the most useful men and women, were conspicuous because these so-called essentials of education never entered into their lives at all? To get hold of the real essential of education you must grasp the environment that encircles the child that is to be taught. Do not find fault with the rural school, but with the spirit and method that dominates it. Be aware of this fact: banish the rural school, or the consolidated rural school, and you banish from your rural community one of the most vital influences that you have inherited. If you would banish anything, banish the spirit that has filled the school and misdirected it. Banish every influence that tends to interfere with the play of environmental results. Keep the school, but redirect the spirit, the method, the influence.

The real essential, then, in education is life. It is so in the college and in the high school; it is so in the city schools; and if the country school is to be saved, this essential must be vitalized also.

But how may this be done? Ask yourself the question, What are the environments of country children? Need I suggest that they are of country things—soils, plants, animals, bacteria, roads, fences, books, games, and character?

Redirect the country school so that the living, vital problems of country living may be introduced and you will save the school. Keep them out and the school is lost.

I confess that I am an advocate of agriculture being taught in the school. My many years as a pupil in a small rural school, and the subsequent years in the graded school, college, and in actual school work, convince me that the rural school, if redirected, will stand on its own bottom and will do its own work.

But in what way is this redirection of the school to go? I answer, it can go in one way only: it must go in way of the environment of the child. The country school is now filled with so-called essential studies. I indicated that these are not essentials. Some one called them so, and that ended the matter. The one essential is life; and reading, writing, arithmetic, grammar and geography are only means of equipping that life. You can ride behind an ox in making a journey, but a horse will serve you better, both in way of time saving and personal pride, and the railway train will still be more satisfactory if the distance is long and the weather in-

clement. So, too, may a school study be of many sorts. Take arithmetic, for example. It is now largely numerical puzzles, made for city people about city things. But no arithmetic touches the real pulse of country things, and hence is not the sort for country children. Country children deal with soils, plants, and animals; their problems should center about such concrete objects as these, and not about groceries, dry-goods, or stocks and bonds. Teach in rural arithmetic the problems as they relate to soil moisture, the compounding of feeding rations, the fertilizing of lands, the cost of spraying farm orchards, the crops of the farm, the production of meat and milk or butter, and a thousand and one real, vital, living problems that are a part of the life of the child, and this study will assume a new meaning and the rural school a new dignity. And with it all you will be teaching arithmetic, but of a better, more useful, more vital nature.

What is here said of arithmetic may be said of every subject now taught in the school. Agriculture, of course, but a vital agriculture—just such as every man, lawyer, doctor, merchant, farmer, needs.

And in the rural school let some real useful information of an agricultural nature be taught. Let the country child get acquainted with country things; let him know what they mean.

When you do these things you will direct the country school into its real direction and you will vitalize it and it will do its work.

Just go on with the country school as you now are and you will soon end it. If you stop, redirect its course to make rural education dynamic and vital; if you fit the school to the needs of the environment; if you teach country things and not city things; if you train the child in the direction of the life he will most likely take in life you will save the school, you will secure the best training in character and fitness of the individual, you will magnify rural living and dignify country institutions.

CHAS. WM. BURKETT.

The State Federation of Women's Clubs will hold its annual meeting May 19, 20, 21, and 22, in Manhattan. Tuesday, May 19, the State and district officers will hold a council at the Gillett hotel, and in the evening there will be a reception. The formal opening of the meeting will be held Wednesday morning, at 9 o'clock. A program covering three convention days has been prepared. President Nichols and Professors Kammeyer and Calvin will give addresses.

Fungus Checks the Ravages of Black Hills' Timber Beetle.

The bark beetle which for several years has been working havoc in the valuable pine timber of the Black Hills, S. D., has apparently been given a check by a fungus which finds in the dying trees a congenial place of lodgment, and at the same time kills the beetles in the bark. There is hope that the worst of the scourge in that region has passed.

For ten years this beetle has been sweeping through the Black Hills forests, every year invading fresh areas. The total amount of pine destroyed by it is reckoned at not less than one billion feet board measure. At the present stumpage price of green timber in South Dakota, this loss would amount to $6,000,000. It now appears that its maximum destructiveness was reached about two years ago, and it is now on the decline.

Two years ago the discovery was made that a fungus was at work in the timber killed by the beetles in which the broods were passing their infant stages preparatory to taking flight to new forests. It was noted at that time that the fungus was fatal to the young beetles, but the full extent of the work done by the fungus has just been made known in a report covering investigations of many months by the Forest Service.

The fungus is a "bark peeler." Experts have claimed all the time that the bettles could be checked if some way could be found to peel the trees in which the young broods are harboring. They live in the inner bark and next to the wood. When the bark is separated from the wood their galleries are laid open and they die. Efforts have been made in the affected districts to peel standing trees. Machinery has been made for that express purpose, and trunks were stripped to a height of 20 feet. But so large are the affected areas that the few trees peeled were not a drop in the bucket.

Efforts were made at different times to cut the dying timber. Tracts were sold to mill men, and large quantities were cut, but not enough to have any appreciable effect on the beetle invasion. Woodpeckers helped the work along. They flocked to the dying trees by hundreds and stripped them of their bark and devoured the young beetles by the million. But that was not enough. The pest had gained such headway that it was beyond the power of bark peelers, log cutters, and woodpeckers.

Meanwhile the peculiar fungus was gaining headway and getting in its work. It appears in the form of a grayish slime between the bark and the wood. It makes the bark loose and it falls, leaving the trees bare, and bringing down the multitudes of

young beetles to their certain death; or, if the bark still hangs on the trunks, the effect on the beetles is equally fatal, for they die in their galleries and larva mines.

The habits and life history of this bark beetle render it defenseless when attacked by the fungus. The parent beetle bores a gallery several inches long in the inner layers of bark, grooving the wood. Eggs are deposited at intervals along both sides of the gallery, often as many as sixty or seventy. These eggs hatch, and while in the larval state they bore short galleries at right angles to the parent tunnel. They remain there a year, eating and growing. Their depredations kill the most vital part of the tree, the cambium, though the tops and needles do not succumb at once, and it is at that stage that the fungus appears and brings the career of the beetle brood to a close.

In normal conditions it probably finds a few lightning-struck trees in the proper decline to suit its purposes, or it may attack storm-thrown timber, but it is not numerous enough to kill trees, and its invasion can not gain headway. But when some unusual condition, such as caused by a hurricane sweeping over a large timber area, provides a start, the beetles may increase in numbers until they are able to attack vigorous trees and kill them, and in fact when the epidemic is at its height, they almost invariably attack living trees. That is what has happened in the Black Hills. The invasion continues until some enemy reduces the beetles below the point where they are able to kill timber. That puts an end to the invasion. This is, apparently, what the fungus is accomplishing in the Black Hills at this time.

Kansas Teachers' Institute.

The work of the Kansas county normal institutes, where teachers "brush up" on their work and prepare to obtain certificates, will begin May 25 and close August 21.

The institutes are divided into four sections, according to the date of their meeting. The four sections meet on the following dates: First section—May 25 to June 19. Second section—June 1 to June 26. Third section—June 29 to July 24. Fourth section—July 27 to August 21.

The law requires the State superintendent to visit every county institute in the State. By putting his assistant "on the job" and working at it himself, it is possible for the law to be complied with, but it means a busy time for the State superintendent, especially during the time the second section is in session.

The counties will hold their institutes as follows: First section —Doniphan, Ellis, Ellsworth, Gove, Haskell, Lane, Rice, Rush, Scott, Stafford, Sumner, Wichita. Second section—Allen, Anderson, Atchison, Barber, Barton, Bourbon, Butler, Chase, Chautauqua, Cherokee, Cheyenne, Clark, Clay, Cloud, Coffey, Crawford, Decatur, Douglas, Elk, Ford, Franklin, Geary, Grant, Gray, Greenwood, Hamilton, Harvey, Hodgeman, Jackson, Johnson, Labette, Leavenworth, Logan, Lyon, Marion, Marshall, McPherson, Mitchell, Montgomery, Morris, Ness, Norton, Osage, Ottawa, Pawnee, Phillips, Pottawatomie, Rawlins, Reno, Republic, Riley, Rooks, Saline, Sedgwick, Seward, Shawnee, Sheridan, Sherman, Smith, Stanton, Thomas, Trego, Wabaunsee, Washington, Wilson, Woodson, Wyandotte. Third section—Comanche, Cowley, Dickinson, Finney, Greeley, Harper, Kearny, Kingman, Linn, Meade, Nemaha, Neosho, Osborne, Pratt, Stevens, Wallace. Fourth section—Brown, Edwards, Graham, Jefferson, Jewell, Kiowa, Lincoln, Miami, Morton, Russell.

Conservative Management of Timber Lands.

That Uncle Sam believes thoroughly in the conservative management of timber lands is shown by the fact that he is practicing forestry on lands other than those contained in the National Forests in the West.

Besides coöperating with private owners of woodland in assisting them to apply conservative management, and with various states in a study of their forest conditions, the United States Forest Service coöperates also with the other branches of the Federal Government. Chief among these branches is the War Department. The Military Reservations which so far have been examined and reported upon are those at West Point, N. Y.; Fort Wingate, N. M.; the Rock Island Arsenal, Ill.; and the Picatinny Arsenal in New Jersey. At West Point the forest consists of second-growth hardwoods, and for some time has, in part, supplied the post with cord-wood, lumber, hurdle poles, tan bark, and other forest products. The Forest Service made a working plan for this forest in 1903, and since then cutting has been along conservative lines with a view of perpetuating the forest, and at the same time supplying the post with a definite amount of wood each year. Similar plans are in preparation for the forests of Rock Island and Picatinny Arsenals.

By far the largest piece of coöperative work in which the service is now engaged is that at Fort Wingate, New Mexico, where,

under the supervision of forest officers, the War Department is selling 25,000,000 feet of western yellow pine. This timber lies in the southeast corner of a reservation of 130 square miles, is inaccessible to the post, and was consequently offered for sale. The top market price is being obtained for it, and it is being cut under a rigid contract, according to forestry principles. Under this contract, no trees under sixteen inches in diameter can be cut, except those which are dead or defective, and those whose removal will benefit the forest, and no tree can be cut unless marked by a forest officer. Two trees sixteen inches or over in diameter are left per acre when needed for seed; stumps must not exceed eighteen inches in height; and all merchantable timber, both standing and down, as indicated by the forest officer, must be removed. Failure to remove any timber so indicated and the intentional cutting of unmarked trees are penalized by a stumpage charge of double the contract price.

All brush is being piled and burned, and thus the danger of fire is considerably lessened. The sale was started during the past summer, and it is expected to continue through a period of five years with a cut of five million feet a year. Already about seven million feet has been marked for cutting by a forest officer. The sale is progressing without friction between buyer and seller, and from the start a forest officer has been continuously on hand to look out for Uncle Sam.

Weather Report for Kansas State Agricultural College, April, 1908.

The month just closed was marked by the unusual low wind velocity, there being about 1214 miles less than normal; also by the low barometer pressure on the 24th, which broke all former records.

The mean temperature for the month was 55.7°, or 1.2° above normal. The mean maximum temperature was 68.1°, and the mean minimum temperature 43.3°. Warmest of the month was 85°, on the 19th. The coldest was 20°, on the 2nd. The last killing frost of the month was on the 30th.

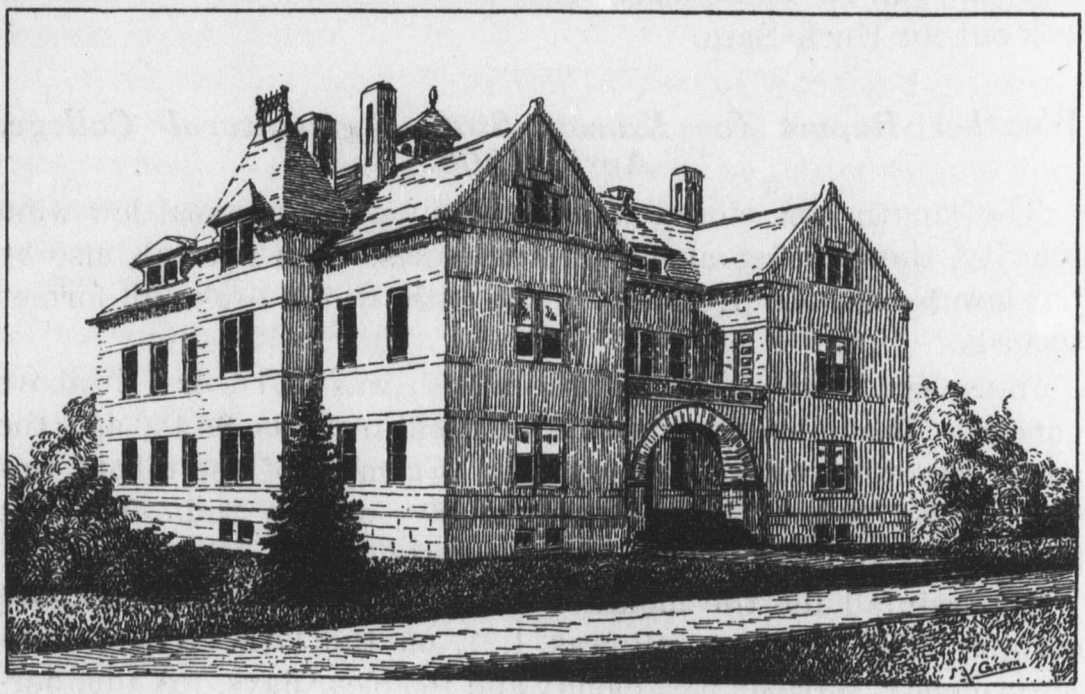
The rainfall for the month was 2.91 inches, or .29 inch above normal. The heaviest fall was 1.21, on the 17th. There were seven cloudy, thirteen part cloudy and ten clear days. A thunderstorm occurred on the 7th.

The total run of wind was 7668 miles. The greatest hourly run was 33 miles, between 3 and 4 A. M. on the 1st. The greatest daily run was 554 miles, on the 27th.

The mean barometer was 28.91 inches. The maximum barometer was 29.43, on the 2nd. The minimum barometer was 28 inches, on the 24th, which is the lowest on record at this station. The average wind direction for the month was west.

The month was favorable for all kinds of farm work, and most crops are reported in good condition. The frost on the 5th did some damage to peaches, pears, and plums. The frost on the 30th killed some strawberries, potatoes, and grapes, but no serious damage reported.

The accompanying "cut" is selected from the portfolio of the senior class in architecture. It represents an eight-room school building, such as would be required by a progressive city of from two thousand to twenty-five hundred inhabitants. The student who drew the pen perspective prepared a complete set of strictly original plans, elevations, sections and details for this building, and as a final exercise made a perspective rendering of it as it would appear from the street. His solution of the problem is not without many shortcomings, but it represents considerable originality and much energetic study. We predict that the young man will become one of the "builders of Kansas."



Stone Schoolhouse.

Local Notes.

The senior architects have had their picture taken.

The track meet of Washburn College and this College will be held in Athletic Park this (Saturday) afternoon.

The Manhattan waterworks engineer reports that he has made over 400 water taps for private residences the past four years.

The Oklahoma Epworth University nine, the champions of the neighboring state, were easily defeated last Saturday on the Manhattan field by our boys. The score stood 4 to 0.

J. G. Haney, formerly assistant in agronomy at this College and at present manager of the Deming ranch, at Oswego, Kan., writes that he is getting along nicely and that he has "two of the finest babies in the world."

The College dairy barn has lately been provided with Gurler's sanitary milk pail and milk strainers. All milk passing into these pails has to pass through two layers of gauze and a layer of absorbent cotton.

The Dairy Department is building a new supply and storage ice-box for the milk, butter and cream sold in the growing retail trade. In front of this ice-box there will be a marble counter with scales to facilitate the sale of the articles.

A special Union Pacific train will carry the College nine and several hundred rooters to St. Mary's on Monday, May 11, to meet the fast St. Mary's College team. The train will leave here at 1:00 P.M. and return at about 6:00.

The soil-moisture determinations for April show somewhat of an accumulation of moisture compared with the study for March. However, the first six feet of soil is still somewhat drier at the present writing than it was a year ago at this date.

Chinch-bugs in considerable numbers have been discovered in one field on the College farm, and neighboring farmers have reported the presence of bugs. A few fields of wheat and other grains will be plowed under to check the spread of this pest.

The Dairy Department will decide in a day or two which of the different makes of ice machines will be installed in the Dairy Hall. The compressor will be placed in the open arch on the south side of the building, where it will work in full view from the road.

Prof. B. F. Eyer, head of the Electrical Engineering Department of this College, will receive the degree of electrical engineer from Armour Institute of Technology, Chicago, on June 4, 1908. Only ten men will get this advanced degree from Armour this year.

The cold weather and frosts April 26 to 30 seem to have done little injury to the field crops. Most of the grain grown on the College farm was advanced sufficiently so that it might have done injury, but the cold does not seem to have been severe enough to cause injury. Alfalfa was not injured.

The juniors had a May-day picnic on the "Old College Farm." The program consisted of a supper, several games, songs, and a story-telling match. When twilight came numerous Japanese lanterns were lighted about the woods and a huge bonfire was kindled. It was a grand old time that the juniors had.

Dr. R. P. Hibbard, who has been stationed here for about six months to make soil bacteriological investigations for the United States Department of Agriculture, has completed his work and will return to Washington, D. C., Monday. He says that Kansas is a glorious agricultural state, and that he enjoyed good treatment while here.

The Physical Training Department is preparing to give an exhibition in the Auditorium on May 15. From the preliminary program, which we have seen, we are sure that it will be a rare treat for those who will be fortunate enough to get an invitation. Admission will be by tickets only, but Miss Barbour says that she ordered two thousand printed.

John Haulenbeck, of the Haulenbeck Lumber Company, has lately built a very unique little cottage on Bluemont Avenue, two blocks from the College entrance. It is built in the modern bungalo style, finished on the outside in stained shingles, and has a pair of very heavy Egyptian columns carrying the front porch roof. It is the most picturesque little house in the city.

Professor Kendall has lately sent out one hundred samples of cream, one to each creamery in the State and samples to about fifteen College Experiment Stations in the United States, accompanied by special report blanks. The object is to obtain information as to how the work of testing and grading is carried on and to establish more uniformity in grading dairy products.

The April number of *Forestry and Irrigation*, edited by Thos. E. Will, formerly President of this College, contains an article on "Arbor Day, The American Spring Festival," by William Canfield Lee. In addition to its general value the article is of special interest to Manhattan people because of its reference to the Arbor Day accomplishment here in connection with the city park. An excellent view of the park constitutes the frontispiece of this number of the magazine, which is the official organ of the American Forestry Association.

Dr. Arnold Emch, at one time assistant professor of mathematics at this College and at present professor of mathematics in the Cantonal College at Solothurn, Switzerland, writes to Professor Walters from Rome, Italy, where he attended the Fourth International Congress of Mathematicians, that the meetings were highly interesting, and that while there he met Professor Moore, of Chicago University, and Astronomer Newcomb, of Washington, D. C. Doctor Emch has read papers at three of the four annual meetings of the association—at the one held in St. Louis, the one held at Zurich, and the one held at Rome.

The Kansas City *Star* pays the following compliment to Regent Blackburn and his collaborator, McCulloch, of Anthony. It says: "Anthony is one Kansas town where the rival editors not only dwell in perfect harmony, but have unlimited admiration for one another. A. P. McCulloch, of the *Bulletin*, never loses an opportunity to speak in praise of W. E. Blackburn, who is a man of literary tastes, a magazine writer, and a Regent of the State Agricultural College. Mr. Blackburn, of the *Republican*, invaribly gives McCulloch the prefix "Hon.," and not only in the paper but in private conversation expresses the conviction that Mr. McCulloch is one of the greatest men in that immediate neck of the woods."

The Japanese government will send Mr. R. Takomine, a government inspector, to inspect K. S. A. C. N. Kawai, a student here now, wrote to Yoshio Ogawa, one of his old classmates but now a graduate of the Sapporo Agricultural College, which is a branch of the Imperial University, that he was very favorably impressed with K. S. A. C. Mr. Ogawa decided to come here and is now a student here. The Japanese government also decided to send an inspector here, hence the visit of Mr. Yoshio Ogawa. K. S. A. C. has four Japanese students and graduates. Those who are here now are N. Kawai, Yoshio Ogawa and Miyawaki. Shige Suzuki, who is now in Japan, was a former student. He started the first creamery operated in Japan.—*Students' Herald.*

A variety test of different varieties of corn in the same field in small plots will be conducted by the Agronomy Department as usual. Some forty different varieties are being prepared for planting. This seed-corn includes not only the corn of our own growing, but also samples secured from seedsmen and from farmers throughout the State. A number of other experiments are being undertaken with corn this season, including different methods of preparation of the seed-bed, different methods of cultivation, different methods of planting, thicknesses of planting, and experiments with different planters in the planting of graded and ungraded corn. The cultivation work is in the charge of Asst. L. E. Call, and the testing of planters, etc., in the charge of Asst. C. S. Knight.

Corn planting was begun April 25 by the Agronomy Department. The department will plant about 120 acres of corn this season for seed production, including nine different varieties planted on separate fields. Ear tests will be conducted with each variety, in which the kernels of over four hundred individual ears will be planted in separate rows. The germination of every ear of corn which the department will plant has been tested, and only those strong in vitality will be used for seed. Greater care than usual has been taken this season to eliminate all impurities in breed. All of the corn has been carefully graded with the machine and sorted by hand after it was shelled in order to remove undesirable kernels. This work is in the charge of Asst. E. G. Schafer, assisted by C. C. Cunningham.

Governor Hoch has appointed the following members of the committee authorized to consider the relations between the three State educational institutions: For the University—J. W. Gleed, T. M. Potter. For the Agricultural College—A. M. Story, Edwin Taylor. For the Normal school—L. B. Kellogg, M. F. Amrine. It was decided by Governor Hoch to place the whole work of considering the relations of the institutions in the hands of one committee, instead of dividing it between two committees as was first suggested. However, he appointed three lawyers on the committee—Gleed, Story, and Kellogg. In his letter notifying the various committeemen of their appointment, Governor Hoch makes the following suggestion of subjects for consideration: First—Does the law governing our State institutions need revision in order to more clearly define their respective fields of operation, or in any way promote their efficiency? If so, fully outline the law as you think it should be. Second—Is it desirable to change the management of these institutions so that they will all be governed by one board of such size as may be agreed upon in order that they may be knit together in one comprehensive and symmetrical educational system instead of operating in individual fields with unlimited power to duplicate each other's work, as now? Third—If it is not feasible to put all these institutions under one management or put over them one superintendent, in what manner can they best be governed so as to prevent unnecessary duplication of work, and hence any unnecessary expenditure of public money.

Alumni and Former Students.

Lieut. Glen Edgerton ['04] has been assigned to service in the engineer corps at the Panama Canal, and leaves to-morrow for New York.

The executive committee of the Alumni Association is completing plans for the reunion next Commencement. These will be announced in due time, but it seems well now to remind those who may be making plans for class or society reunions that, on request of the alumni some years ago, the Faculty set aside Wednesday afternoon and evening for them, no general College exercises being scheduled for that time. The annual business meeting is always held on that day and the triennial alumni address is given in the evening. The formal triennial reunion and banquet is always held Thursday evening, Commencement Day. The committee plans to hold the business meeting rather early in the afternoon, thus leaving the latter part and early evening, from about 3:30 to 7:00 o'clock, for reunions of classes, societies, and other special groups of alumni. Should there be any society reunions held, they would probably better come immediately after the business meeting. By following these suggestions arrangements may be made that will present as few conflicts as possible. Of course, class reunions are also possible at the noon hour Commencement Day, without conflict with the program.

STUDENTS' RECITAL

Department of Music, K. S. A. C.

Auditorium, May 14, 1908

1. Mazurka . . . . . *Leschetizky*
   IRENE INGRAHAM
2. The Two Larks . . . . . *Leschetizky*
   MARY LECRONE
3. Queen of the Earth . . . . . *Pinsuti*
   W. B. FLINT
4. { *a.* Good-Night . . . . . *Nevin*
   { *b.* Gondoleri . . . . . *Nevin*
   MARY AUSTIN
5. "3d Air Varie" . . . . . *Dancla*
   MABLE DIEBLER
6. Impromptu Op. 142 No. 3 . . . . . *Schubert*
   GLADYS BOYLE
7. Calif von Bagdad . . . . . *Boieldieu*
   BESSIE MOORMAM, ELLA MILLER
8. { *a.* Serenade . . . . . *Whelpley*
   { *b.* Staccato Etude . . . . . *Bohm*
   CORA TRIMMER
9. Dost Thou Know That Sweet Land? . . . . *Thomas*
   LILLIAN KENDRICK
10. Valse Chromatique . . . . . *Godard*
    GRACE HAWKINS
11. "Faust Fantasie" . . . . . *Alard*
    GEORGE BARTHOLOMEES
12. Murmuring Spring . . . . . *Rive-King*
    VERA HOLLOWAY
13. { *a.* Liebestraum . . . . . *Liszt*
    { *b.* Witches' Dance . . . . . *McDowell*
    EDNA JONES
14. Calm As the Night . . . . . *Gotze*
    LILLIAN KENDRICK, W. B. FLINT

Board of Instruction (concluded).

JACOB LUND, M. S. (K. S. A. C.) ..... Superintendent Heat and Power Department
JOHN H. MILLER, A. M. ..... Superintendent Farmers' Institutes
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.) ..... Secretary
CLARENCE L. BARNES, D. V. M. (Cornell) ..... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B. S. (Chicago) ..... Assistant Professor of Physics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.) ..... Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard) ..... Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.) ..... Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.) ..... Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K. S. A. C.) ..... Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago) ..... Assistant Professor of Mathematics

---

Miss Ada Rice, B. S. (K. S. A. C.) ..... Instructor in English
Miss Ella Weeks, A. B. (U. of K.) ..... Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount) ..... Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University) ..... Instructor in Veterinary Science
Robert E. Eastman, M. S. (Cornell University) ..... Instructor in Horticulture
Miss Ula M. Dow, B. S. (K. S. A. C.) ..... Instructor in Domestic Science
Theo. H. Scheffer, A. M. (Cornell University) ..... Instructor in Zoölogy
Herbert H. King, M. A. (Ewing College) ..... Instructor in Chemistry
John B. Whelan, B. S. (Nebraska) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Miss Gertrude Barnes ..... Assistant Librarian
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.) ..... Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.) ..... Foreman of Foundry
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C.) ..... Assistant in Printing
Roy A. Seaton, B. S. (K. S. A. C.) ..... Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College) ..... Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale) ..... Assistant in Architecture and Drawing
Chas. Yost ..... Assistant in Heat and Power Department
Earle B. Milliard ..... Foreman of Blacksmithing
J. T. Parker, ... Assistant in Woodwork
J. D. Magee, A. M. (Chicago) ..... Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit) ..... Assistant in German
Miss Florence S. Latimer, B. M. (Ferry Hall Seminary) ..... Assistant in Music
Miss Marjorie Russell (Mechanics' Institute) ..... Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.) ..... Assistant in Botany
Burton Rogers, D. V. M. (Iowa State College) ..... Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal) ..... Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.) ..... Assistant Chemist, Experiment Station
Edw. C. Crowley, Ph. B. (Yale) ..... Assistant in Chemistry
Hugh Oliver ..... Assistant in Heat and Power Department
Miss Charlaine Furley, B. A. (Fairmount) ..... Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (U. of K.) ..... Assistant in Preparatory Department
Leland E. Call, B. S. (Ohio State University) ..... Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University) ..... Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.) ..... Assistant in English
William C. Lane, B. S. (K. S. A. C.) ..... Assistant in Physics
Louis H. Beall, A. B. (Denison) ..... Assistant in English
Miss Flora C. Knight, A. B. (Uni. of Wyoming) ..... Assistant in English
Miss Grace H. Woodward (Boston School of D. S.) ..... Assistant in Domestic Science
Miss Nellie Cave ..... Assistant in Music
Miss Anna I. McKirahan ..... Assistant in Music
Miss Margaret Mack (K. S. N.) ..... Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.) ..... Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.) ..... Assistant in Botany
Charles E. Bassler, D. V. M. (K. S. A. C.) ..... Assistant in Veterinary Science
Miss Mary W. Hancock (Mechanics' Inst.) ..... Assistant in Domestic Art
S. W. McGarrah, A. M. (Grove City College) ..... Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.) ..... Assistant in Animal Husbandry
Arthur L. Peck, B. S. (Mass. Ag. Coll.) ..... Assistant in Horticulture
Kirk H. Logan, B. S. (U. of K.) ..... Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College) ..... Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University) ..... Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College) ..... Assistant in Preparatory Department
Loren Clark ..... Assistant in Printing
Miss Bertha M. Johnston (Simmons College) ..... Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.) ..... Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University) ..... Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.) ..... Assistant in Agronomy
Earle Brintnall, B. S. (Iowa State College) ..... Assistant in Dairy Husbandry
William Neill ..... Dairy Herdsman
G. A. Porteous ..... Herdsman
Wm. A. Lamb ..... Poultryman
Floyd Howard ..... Farm Foreman
William R. Lewis ..... Custodian

Historical Society

THE INDUSTRIALIST

Vol. 34 No. 32

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

The Industrialist.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

TERMS AND VACATIONS.

FALL TERM, 1907, THIRTEEN WEEKS.

Thursday, Friday, and Saturday, November 28, 29, and 30.....Thanksgiving vacation
Thursday and Friday, December 19, 20.....Examination at close of term

WINTER TERM, 1908, TWELVE WEEKS.

Monday, January 6.....Examination for admission, at nine A. M.
Tuesday, January 7.....Winter term begins
Tuesday, January 7.....Short courses in agriculture and dairying begin
Saturday, February 1.....Annual intersociety oratorical contest
Saturday, February 15.....Mid-term examination
Thursday, March 19.....Annual concert
Thursday and Friday, March 26, 27.....Examination at close of term

SPRING TERM, 1908, ELEVEN WEEKS.

Monday, March 30.....Examination for admission, at nine A. M.
Tuesday, March 31.....Spring term begins
Saturday, May 9.....Mid-term examination
Tuesday, May 19.....Beginning of summer course in domestic science
Tuesday and Wednesday, June 16, 17.....Examination at close of year
June 14 to 18.....Exercises of Commencement week
Thursday, June 18, at ten A. M.....Commencement
June 19 to September 16.....Summer vacation

FALL TERM, 1908,

Wednesday, September 16.....Examination for admission, at nine A. M.
Thursday, September 17.....College year begins

BOARD OF REGENTS.

HON. A. M. STORY, President.....Manhattan
HON. J. O. TULLOSS ['99], Vice-President.....Sedan
HON. J. S. MCDOWELL.....Smith Center
HON. GEO. P. GRIFFITH.....Hays
HON. EDWIN TAYLOR.....Edwardsville
HON. W. E. BLACKBURN.....Anthony
PRES. E. R. NICHOLS, Secretary *ex-officio*.....Manhattan

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
CHARLES WM. BURKETT, M.Sc. (Ohio State University).....Director Experiment Station
JOHN D. WALTERS, M.S. (K.S.A.C.).....Professor of Architecture and Drawing
JULIUS T. WILLARD, M.S. (K.S.A.C.).....Professor of Chemistry, Vice-Director Exp. Station
BENJ. L. REMICK, Ph.M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K.S.A.C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph.M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M.S. (K.S.A.C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph.D. (Univ. of City of New York).....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B.S. (K.S.A.C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College).....Professor of Economics
JOHN V. CORTELYOU, A.M. (Uni. of Neb.), Ph.D. (Heidelberg).....Professor of German
OLOF VALLEY, B.M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D.V.S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B.S.A. (Iowa State College).....Professor of Animal Husbandry
WALTER E. KING, M.S. (Cornell).....Professor of Bacteriology
THOMAS J. HEADLEE, Ph.D. (Cornell).....Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U.S.A.....Professor of Military Science
JOHN C. KENDALL, B.S. (N.H.A.&M.).....Professor of Dairy Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art
MISS ANNE M. BOYD, A.B., Lib. Sci. (Millikin).....Librarian
ROBERT J. BARNETT, B.S. (K.S.A.C.).....Principal Preparatory Department

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., MAY 16, 1908. No. 32

Experiments to Exterminate the Bindweed.

Professor TenEyck was at the Hays Branch Experiment Station last week investigating the bindweed experiments which he has been conducting on the farm of Andrew Sander, seven miles east of Hays. Following is a preliminary report of his investigations:

The experiments in exterminating the bindweed were carried on last season in coöperation with Andrew Sander, on his farm near Victoria. Mr. Sander furnished the land rent free. He was also employed to look after the work required in carrying out the experiments, which work he has very satisfactorily done. The experiments last season consisted of sixteen different treatments of cropping and cultivation, which were carried out on sixteen one-acre plots. These plots lay adjacent to each other in a field which was quite uniform in character of soil, and which was well set with the bindweed.

Two general plans for exterminating bindweeds were undertaken last season, namely, (1) different culture methods, and (2) the use of "smothering" crops.

The culture methods include different depths of plowing, different dates of plowing, and continuous cultivation after plowing on all fallow plots. All the culture methods employed last season practically failed to destroy the bindweed. On twelve of the fourteen plots subjected to twelve different methods of culture, no weeds were allowed to seed during the season, yet the weeds are a thick stand and have a thrifty growth this spring on each of these several plots. In fact, the weeds appear to have a better stand and a stronger growth on these cultivated plots than on land adjacent which received no cultivation. The only culture treatment which seems to have harmed the weeds in the least is the late fall or winter plowing. Plots 15 and 16 were plowed late in November, and these plots at this date (April 29) show a thinner stand of less thrifty plants than appear on the other plots. It seems that the late plowing, perhaps by exposing the roots of the weed to frost, has destroyed many of the plants and materially weakened those plants which survived.

It was planned to seed one plot to alfalfa and another plot to bromus inermus last fall, but this plan was not carried out. However, these plots will be seeded this spring, and the hope is that the alfalfa and brome grass, if these crops are once well started, will successfully compete with the bindweed. The fact that Mr. Sander has a field of alfalfa which is comparatively free from the weeds, and which lies near the field upon which these experiments are being carried on, favors such conclusion.

Corn was planted on one plot, which was thoroughly cultivated both before and after planting, and the weeds were kept down; however, this plot is now covered with strong, thrifty bindweed. Kafir-corn was planted on one plot, but the crop was destroyed by late frosts and was not replanted.

Plot 10 was seeded to sorghum about June 1, the weeds having been subdued until that date by cultivation with the Acme harrow. The bindweeds are thinner and less thrifty on this plot than on any other except plots 15 and 16, which plots were plowed late in fall.

It appears from the work of a single season that ordinary methods of destroying the bindweed by thorough cultivation have only resulted in more favorable conditions for growth, by storing and conserving soil moisture and by preparing an abundant supply of readily available plant-food. Although the plants may be cut off and apparently destroyed many times during the season, the live roots remain in the soil and quickly start new shoots again after each cultivation. There is some promise, however, that by winter plowing and the proper use of smothering crops, such as sorghum and Kafir-corn, the bindweeds may be destroyed, or at least weakened in vitality and greatly reduced in numbers. With a year or two of such treatment and preparation, it may be possible to so check the weed that profitable crops of wheat and other grain may be grown on bindweed infested land.

The work with Mr. Sander will be continued during the present season. The plan of the experiment will be changed somewhat. No cultivation will be undertaken except that sufficient to secure clean, well-prepared seed-beds. A number of smothering crops will be planted on several plots this summer and given a thorough trial; also, the experiments in late fall and winter plowing will be continued.

These experiments are being conducted mainly with the purpose of learning the best methods of controling the bindweed on large, infected areas. It is important, however, that every means

possible be used to prevent these weeds from spreading and infecting new areas. Care should be taken when an infested spot is found not to spread the contagion over the field by dragging the roots about with the plow or harrow.

Small patches of the weeds may be destroyed by very frequent hoeing. In order that hoeing may prove successful, however, it will be necessary to prevent the weeds from making any growth of foliage. The young plants must be cut just as soon and as often as they appear above the ground. The patch should be hoed regularly, say once a week, during the growing season.

Again, the weeds may be destroyed by poisoning the ground with salt or brine, by applying such a quantity that the soil will be "killed" so that nothing will grow in it for several years. Also, the weeds may be smothered by stacking straw on the infected spot, or a thick covering of straw, three or four feet in depth, may be spread over a larger area and left for a year or two. Farmers are urged to practice one or more of these several methods of destroying the weeds and report the results.

Hickory Supply Closely Watched.

Automobile and carriage manufacturers, along with the men of the allied vehicle industries, are giving very serious consideration to the question of the future supply of hickory timber. This wood, which is one of the most important of all woods, since no satisfactory substitute for it has been found, plays a more important part among the commercial timbers than many people realize.

For automobile and carriage wheels, where strength, toughness and resiliency are essential qualities, no other wood has been found in this country that will take the place of hickory. Manufacturers say that no steel or wire spoke has yet been found that will withstand the wear and tear of the hickory spoke, and for this reason the welfare of the vehicle industry seems dependent upon the conservation of the hickory supply.

Three of the largest associations of hickory users in the country—the National Wagon Manufacturers' Association of America, the Carriage Builders' National Association, and the National Hickory Association—have completed a series of coöperative tests with the United States Forest Service, and the trade considers the results highly important. The tests covered a close study of the properties of different woods used in vehicles and implements, supplemented by mechanical tests to ascertain the relative strength of different woods and different forms of construction, and to test the accuracy of the present system of grading.

In a report of the tests made by H. B. Holroyd, forest assistant, and H. S. Betts, engineer in timber tests, of the Forest Service, the fact is brought out that there is an error of over 50 per cent in the grading of vehicle stock, due largely to the prejudice of the manufacturers against the use of red hickory. It is shown that in clear stock, weight for weight, the red hickory is as strong as the white. By bringing this fact to the attention of the manufacturers, it is hoped that much of the hickory which was formerly left as waste in the woods will be utilized by the trade and thus prolong the rapidly disappearing supply of hickory.

Such practical results as are given in the report, which a letter to the Forest Service at Washington will secure free for any one who wishes it, show conclusively the value of such studies in solving problems connected with the grading stock, the utilization of new for old woods, and the conserving of our future supply of timber. The supply of good hickory in the United States is known to be very limited. The cut last year for lumber was a little less than 150,000,000 feet, and it is estimated an even greater amount was used for automobile and carriage wheels, axle caps, gears, axles, poles, single-trees, and neck-yokes, and it is figured that at the present rate of cutting the supply will last about fifteen years.

Reports are made from time to time of the discovery of suitable substitutes for hickory in foreign countries. The two woods which come nearest to having the quality of the hickory seem to be one of the eucalyptus and the crowfoot elm, both of Australia. Only time will tell whether these woods will prove satisfactory substitutes. In the meanwhile, American hickory users will be obliged to conserve the present supply and take steps to guarantee a future supply by encouraging private planting of the tree, whose wood is becoming more precious each year.

Positions for Students.

The Extension Department of the Kansas State Agricultural College will act as a sort of bureau for aiding students to get good positions, and in aiding farmers, threshermen, ranchers, school officers, etc., in getting good workers and teachers.

1. A dozen students who have had instruction in running traction engines want permanent places for the threshing season. These are juniors and sophomores, farmer boys who are not afraid to work.

2. Probably fifty young men want work for the summer, some with harvesting and threshing crews, others on stock farms, and

others on fruit farms and nurseries, others on dairy farms or in creameries. Their preferences are along the lines of their particular courses here, but the principal object is cash for next year's expenses.

3. Seniors. (1) Some want work on stock, grain, fruit and dairy and poultry farms, positions that will pay reasonable salaries and give practical experience. (2) Some want positions to teach the sciences, including agriculture. (3) Others want to teach mathematics and manual training. (4) Twenty young ladies want positions in schools to teach domestic science and art. (5) Several who are able to teach the above subjects are also willing to take positions to teach other high-school subjects or to teach in the grades.

Correspondence may be addressed to the President or to the Superintendent Agricultural College Extension, Manhattan, Kansas.

National Corn Exposition.

The National Corn Breeders' Association will hold its second annual exposition at Omaha, Neb., December 10 to 19, 1908. The first National corn exposition at Chicago last October was one of the greatest expositions of its kind ever held. In fact it was more than an exposition; it was a great school to those interested in breeding and growing corn. There is no question but that the exposition at Omaha next fall will be the greatest thing of its kind that has ever been carried out. As announced by the management of the National Exposition Company, the purpose is to exhibit not only corn, but also other cereals such as wheat, oats, and barley. Alfalfa and grasses may also be included as a part of the exposition.

Definite plans for the exhibits and awards have not yet been published by the National Association. However, the association will offer generous premiums on exhibits of hard winter wheat, soft winter wheat, durum wheat, spring wheat, and several classes of oats, barley, rye, emmer, etc. There will also be pure-bred classes of some of the leading varieties of wheat, oats, barley, etc. The awards will be liberal, ranging from $50 or $100 down to $5 for each of the best ten samples in each class.

The corn exhibits will be the great feature of the exposition. There will be several classes open to the world, of yellow, white, and other corn in which the awards will be liberal, ranging from $100 or $150 down to $10. There will also be standard pure-bred classes and awards for the ten best samples of pure-bred varieties,

such as Reid Yellow Dent, Boone County White, Silvermine, Leaming, etc. There will be classes also for boys, of yellow corn, white corn, and other corn, for which liberal awards will be given for the best ten samples exhibited in each class; possibly also for girls and women.

The National exhibition management will offer special premiums ranging from $50 to $5 for the best ten samples of yellow corn, white corn, and other corn, grown by Kansas farmers and exhibited in a Kansas class or department.

It is proposed by the Kansas committee on corn exposition, appointed by Governor Hoch, to arrange a series of classes and awards for special Kansas exhibits. There will be classes of each of the best known or pure-bred varieties of "Kansas corn," namely: Kansas Sunflower, Hildreth, McAuley, Roseland White, Hammett White Dent, Hiawatha Yellow Dent, Calico, Bloody Butcher, and perhaps other Kansas varieties.

The awards for these exhibits will be furnished by the contributors who are particularly interested in the development of their particular variety of corn. T. D. Hubbard, Kimball, Kan., has already offered $25 for the best samples of Roseland White corn.

It is proposed also to offer special premiums for exhibits of pure-bred varieties of other grains such as the Kharkof, Malakoff, Turkey Red, Zimmerman, and Fultz varieties of wheat; Sixty-Day, Red Texas, and Kherson oats; Mansury, Bonanza, and Common Six-Rowed barley. Possibly, also, there will be classes and awards for pure-bred varieties of Kafir-corn, sorghum, and broomcorn, such as the Black Hulled White, White, and Red Kafir-corn; Kansas Orange, Coleman, and Black Dwarf sorghum; Genuine Dwarf, Oklahoma Dwarf, and California Golden broomcorn, etc.

The criticism has been made that awards for exhibits take in quality of the product and purity of breeding only. The State committee proposes to offer awards for the best acre of corn and the best acre of wheat, taking into consideration both yield and quality of grain produced. Ten awards will be made in each class, the amount of premium ranging from $50 to $100 down to $5. The plan will call for an exhibition of ear corn and one-half bushel of wheat. The corn or wheat must be grown on a measured acre of land and affidavits must be made as to area and yields secured, both by the grower and a competent assistant or helper, who shall be appointed by the chairman of the State committee. A bushel sample of ear corn which is an average of the crop must be taken at time of husking, weighed and shipped

directly to the Agronomy Department of the Kansas State Experiment Station, Manhattan, Kan., in order that moisture determinations may be made, since the moisture in the corn at husking time varies, and in order to secure comparative yields the moisture content must be the same in all samples.

The junior exhibit of the corn exposition by the boys and girls will be an important and interesting feature, and aside from the premiums offered by the National exposition management it is proposed to arrange for special awards for Kansas boys and girls who enter this contest.

At the National exposition at Chicago last fall, some of the agricultural colleges, including Kansas, made educational exhibits. The National exposition management wishes to make the educational exhibits a prominent feature of the coming exposition. The Kansas State Agricultural College will undertake to make a good showing along this line.

Mr. J. Wilkes Jones, general manager, has announced that the executive committee of the exposition has appropriated and authorized the use of $150 to aid in preparing and installing a Kansas State educational exhibit. It seems advisable, therefore, that such an educational exhibit represent not only the Agricultural College, but the whole State, and all are invited to contribute or assist in preparing such an exhibit of wild grasses of the State and of samples of standard varieties of corn, oats, wheat, and barley from different sections of the State: Northeastern, Eastern, Southeastern, North-central, Central, South-central, Northwestern, Southern, and Southwestern. Such samples should be bundles of grain in the head or straw, corn in the ear, Kafir-corn in the head, etc. Some counties are proposing to make county exhibits of the general crops of that county. These, perhaps, may be included under the general educational State exhibit.

The purpose of this announcement is to call the attention of the farmers to the subject and interest them in the several exhibits and features of the National corn exposition so that they may begin now, by preparing a seed-bed, planting well-bred corn, and giving thorough cultivation to prepare well-bred corn, and good exhibits for this great contest. You are requested to correspond with the member of the State committee in your section of the State, also questions or suggestions of a general nature may be addressed to the chairman of the committee.

We hope that the farmers of the State will take hold of this movement and push it. Nebraska, Iowa, Missouri, and other adjacent states are making great preparations along this line. They

will be well represented; Kansas should not take a second place. I hope that every progressive farmer who reads this will prepare to take part in this great competitive school and exposition. Begin now.

No money has been appropriated by the State to promote this exposition. The members of the committee will serve without compensation. Every one will help in this work without reward other than that which he may receive in honors and premiums and in the satisfaction which will be his reward for work in a good cause well done.

The members of the committee appointed by Governor Hoch are as follows: T. D. Hubbard, Kimball; J. M. Gilman, Leavenworth; A. M. TenEyck, Manhattan; Arthur Capper, Topeka; C. K. McClelland, Hays; J. H. Miller, Manhattan; H. H. Kern, Bonner Springs; W. M. Kinnison, Garden City; J. G. Haney, Oswego; C. B. Kirtland, Salina; A. F. Turner, Norton; S. W. Black, Columbus; E. Taylor, Edwardsville; I. D. Graham, Topeka; C. Hoffman, Enterprise; W. Russell, Winfield; Hon. W. E. Blackburn, Anthony.

A. M. TENEYCK,
Chairman of Kansas Committee.

A Government Laboratory.

It is doubtful if any of the laboratories maintained by the government for scientific research are more unique in character, and yet bear promise of more important results, than one which has just been established in Washington by the United States Forest Service for investigating the structure of commercially important woods.

Laymen will not understand the significance of the proposed investigations carried on in this laboratory so quickly as architects, builders, and other wood users, who in these days of growing scarcity of the more valuable woods are seriously perplexed in identifying substitutes. Mistakes of this kind in identification have, in the last few years, in several instances, meant the loss of thousands of dollars, and many embarrassing law-suits.

Nearly any user of lumber can recognize, and name off-hand, all the usual trees of the forest when he sees them growing, and not much difficulty is encountered in identifying the common kind of lumber in a mill yard, because he knows the few trees from which the yard lumber comes. But common kinds are growing scarce, and woods not often cut heretofore are appearing in the markets. The most experienced men are sometimes puzzled

when they try to identify them, and persons with less experience have still more trouble. Is a certain wood gum or elm? Is another cucumber, linn, or poplar? Is a stick sugar maple or red maple? Doubts may arise whether a piece is hemlock or spruce, or whether it is lodgepole pine or fir, or whether a shingle is cypress or cedar. A dealer may buy red oak and suspect that he is getting something else. There are thirty or more important species of oak. The best lumber dealer might not know which is which in the lumber pile, or, if he knows, he might not know how to prove it.

Many of these woods look alike, even to the trained eye of the millman or the builder, and yet they are widely different in value for certain purposes, and it is of the greatest importance to be able to distinguish them quickly and certainly. Again, a new wood may come to a man's notice for the first time, and it may be necessary for him to decide what it is and what is it worth.

The government has been helping individual lumber users for some time, but the facilities have not been near so complete as they are now. It is to meet such needs and answer such questions that the Forest Service has established the laboratory and placed it in charge of a trained dendrologist. Architects, lumbermen, manufacturers and makers of woodware are already sending in samples of wood for identification, and asking if there are not some structural characters by means of which such woods may be conveniently separated for relative species having greater or less value for some specific purpose.

The laboratory will investigate in a practical way. The structure of the woods, sections lengthwise and crosswise, will be studied so as to separate by structure alone the various species of a genus. Analytical keys to the trees of each group will be worked out. These will be based on the arrangement and character of the pores discernible to the naked eye, or by a hand lens.

The results will be published from time to time with good illustrations and placed at the disposal of lumber users. After all the important groups of wood, such as oaks, pines, and firs, have been studied and the results published separately, the several monographs will be collected and published in one volume.

A work of this character has long been in demand by architects, builders, and other users of lumber. It will, in most cases, enable even a non-technically trained man to determine quite readily the wood he deals with by means of an ordinary hand lens and by comparing the wood in question with the photographs of cross and long sections given in these monographs.

Local Notes.

T. A. Borman, editor of the *Farmers' Advocate*, visited College the first of the week.

President Nichols was in Topeka and Kansas City on business Wednesday and Thursday.

G. H. Wright, '08, was elected teacher of science, including agriculture, at Lyons, Kan.

Instructor H. E. Porter, of the Department of Mathematics, will study in Boston during the summer.

Prof. P. G. Holden, superintendent of extension work of the Iowa State College, visited here last week.

The banner won at the State track meet two years ago has finally been received by the Athletic Association.

Librarian Anne M. Boyd was called to her home in Illinois last week on account of the serious illness of her mother.

The President's office, under the skillful hands of the painters and carpenters, is undergoing a complete renovation.

Assistant A. L. Peck, of the Horticulture Department, is receiving congratulations on the safe arrival in his home of a brannew crown prince.

The campus never looked greener and brighter—it is the most beautiful spot in the most beautiful State. You may now come and see us.

The College track team will probably go to Stillwater, Okla., where they will enter the dual track meet with the Oklahoma Farmers on June 1.

Assistant E. G. Meinzer, of the German Department, intends to spend his summer vacation in the summer school of Wisconsin State University, at Madison.

Prof. Albion W. Small, of the Department of Sociology and Dean of the Graduate School of the University of Chicago, will deliver the annual address at Commencement.

Professor Kinzer and his class in stock-judging visited the Thistler breeding ranch at Chapman last Monday and judged Percheron horses and Shorthorn cattle.

Prof. J. B. Parker, of Ohio State University, has been elected assistant in the Department of Entomology. Mr. Parker will do most of the field work of the department.

Professor Roberts sailed from New York on May 9 for Europe, where he will spend the summer in wheat investigations. He will first study the wheat conditions of southern Europe, especially of Italy, Turkey, and the Danube valley, then he will go north as the harvests progress and visit Germany and the Baltic provinces of Russia. The trip is made in accordance with a State law passed by the last legislature. Mrs. Roberts will accompany the professor on the trip.

The advantages of an education were shown in the cake-baking contest, held by the Spot Cash store, which ended last Saturday afternoon. There were twenty-nine entries in the contest and many of the contestants were cooks of long experience, but the first prize, a barrel of flour, was won by Miss Ellen Berkey, a student in the Domestic Science Department at the College. In this connection it should be mentioned that the judges were women of experience and not connected with the College.—*Mercury.*

The "College family" was startled last Monday morning by the report that a student had made an attempt to take his own life. Otto Schields, a freshman from Hanover, Washington county, attempted suicide in his room at the home of Mrs. Mather, on Bluemont Avenue. He shot himself with a 32-calibre revolver in the left breast. The bullet entered his body just above the left nipple, and piercing both lungs came out above the right shoulder blade. The wound, however, has not yet proved mortal and the young man has been lingering between life and death since the tragedy, at Park View hospital. The only cause to which can be ascribed the attempted self-destruction is nervous depression. Otto Schields, who is 26 years old, came to Manhattan a year ago last fall. His sister, Clara, who won the oratorical contest this year, and his brother, George, are also students at College. Their parents are dead. The Schields have an excellent reputation in every respect, and every one who knows them sympathizes with them and hopes that Otto will soon be all right again.

Our athletes have won three famous victories since last Saturday. On that day they beat Washburn College at the Manhattan Athletic Park in the annual track meet, 79 to 47. In addition they broke the State record for the hammer and discus throw, and raised the College records for the 220-yard dash and the two-mile run. Senior Seng, who is responsible for the throws, added about four feet to the record of the hammer and seven and a half feet to that of the discus. The parties who are guilty of breaking the dash records are Christian for the 220-yard and McNall for the two-mile jaunt. On Monday afternoon the baseball team, accompanied by about two hundred rooters, went to St. Mary's to play with the College on their field. The game was hotly contested and the ground was in poor condition on account of the heavy rains during the previous night, but our boys came out ahead to the tune of 3 to 2 in a twelve-inning game. This victory places the Farmers in line for the State championship, as St. Mary's defeated Washburn and K. U. some time ago and these three are considered the fastest in the collegiate league. Our boys speak well of the treatment received in St. Mary's, and say that they will reciprocate when Manager Quigley and his boys come up here. On reaching Manhattan our team was received with a parade and a bonfire. Thursday afternoon they defeated Highland Park College, Des Moines, Iowa, in the Manhattan athletic field, by a score of 5 to 2.

Professor Heston, formerly president of the South Dakota Agricultural College, will visit this College to-day (Saturday). We understand that the professor is a candidate for the executive chair.

The recital by the Music Department last Thursday night in the Auditorium was well attended and a perfect success. All the numbers of the program were well rendered and well received. There will be two more recitals before the close of the term, one of which will be given Commencement week to give the visitors a chance to hear good music.

The College Y. M. C. A. and Y. W. C. A., jointly, will issue a special number of the *Students' Herald* some time this term. The object of this special issue is to advertise the national convention, to be held at Cascade, Colo., this summer. Pictures of former conventions held at Cascade will be run in this issue. The following staff will conduct this special edition of the *Herald:* Editor-in-chief, H. A. Praeger; assistant editor-in-chief, Helen Sweet; local editors, Ralph Hull and Miss Grizzell; business manager, Harry Colwell; athletic editor, E. S. Taft; alumni editor, Helen Westgate; intercollegiate editor, Miss Bessie Tolin.

Washburn College was defeated here last Saturday afternoon in a dual track meet with the Agricultural College. Our boys started out in the lead, and kept in the lead all through the meet. One State record was beaten and several College records were broken. Seng, for our team, threw the discus 113 feet, which beats the State record by eight feet. The score was 79 to 47. Following is the summary: One-hundred-yard dash—Dixon, K. S. A. C., $10\frac{3}{5}$ seconds; Christian, K. S. A. C., second; Weed, Washburn, third. Mile run—Phenix, K. S. A. C., 4:51$\frac{2}{5}$; Austin, K. S. A. C., second; Dunn, Washburn, third. Two-hundred-twenty-yard dash—Christian, K. S. A. C., $23\frac{2}{5}$ seconds; Carr, K. S. A. C., second; Weed, Washburn, third. One-hundred-twenty-yard hurdle—Broadfield, Washburn, $19\frac{2}{5}$ seconds; Foster, Washburn, second; Manalo, K. S. A. C., third. Pole vault—Ross, K. S. A. C., 9:5$\frac{1}{2}$ feet; Bowman, Washburn, second; Bushey, K. S. A. C., third. Shot put—Seng, K. S. A. C., 34.2 feet; Foster, Washburn, second; Broadfield, Washburn, third. Broad jump—Weed, Washburn, 19 feet; Broadfield, Washburn, second; Bentley, K. S. A. C., third. Hammer throw—Seng, K. S. A. C., $112\frac{3}{10}$ feet; Foster, Washburn, second; Broadfield, Washburn, third. Four-hundred-forty-yard dash—Nipps, Washburn, 55 seconds; Detwiler, K. S. A. C., second; Bentley, K. S. A. C., third. Half-mile run—Phenix, K. S. A. C., 2:13$\frac{3}{5}$; Stewart, Washburn, second; Neiman, K. S. A. C., third. Two-hundred-twenty-yard hurdle—Carr, K. S. A. C., $27\frac{2}{5}$; Broadfield, Washburn, second; Cunningham, K. S. A. C., third. Two-mile run—McNall, K. S. A. C., 10:57; Austin, K. S. A. C., second; Ely, Washburn, third. Running high jump—Dixon and Manalo, K. S. A. C., 5:3$\frac{1}{2}$ feet; Weed, Washburn, third. Discus throw—Seng, K. S. A. C., 113 feet; Ferguson, Washburn, second; Foster, Washburn, third.

Alumni and Former Students.

Archie Conner, '06, and Miss Nellie Feese were married Thursday, May 14, at Mitchell, Kan. They will live on a farm near Mitchell.

Loraine is the name of the daughter born to Jeannette (Perry) Thomas and H. M. Thomas, both of '98, May 9, 1908, at their home in Harrisburg, Pa.

J. H. Blachly, '00, has completed his course at the Western Dental College, Kansas City, Mo., and will locate in Manhattan for the practice of his profession.

R. C. Bowman, '07, will teach the sciences, including agriculture, in the Crawford county high school next year. He will also start the work in manual training.

Del Mar Akin, '01, was one of those who received the degree of M. D. from the University Medical College, Kansas City, Mo., last week. He is undecided yet as to where he will locate.

Announcement is made of the marriage of Percy E. Lill, '07, and Helen E. Bottomly, '05, at Cedarvale, Kan., Wednesday, May 6, 1908. They are at home on a farm near Mt. Hope, Kan., where the best wishes of many friends follow them.

Changes of address: Jane C. Tunnell, '89, 5458 Greenwood Avenue, Chicago, Ill.; Geo. W. Wildin, '92, New Haven, Conn., in care of N. Y., N. H. and H. Railway; Grant Dewey, '90, 423 East 47th street, Chicago, Ill.; C. A. Campbell, 1728 Williams street, Denver, Colo.

F. O. Woestemeyer, '99, was married Thursday, May 7, to Miss Margaret E. Durboraw, of Philadelphia, Pa. They are now visiting at the Woestemeyer home, near Kansas City, and will be at home after June 20 at Rossville, Kan., where Reverend Woestemeyer is pastor of the Presbyterian church.

John S. Hazen, '89, of the Weather Bureau of the United States Department of Agriculture, writes as follows: "I take pleasure in announcing that I have again returned from Tampa, Fla., to civilized life, and request that the industrial paper of the College be sent to me at Springfield, Mo., instead of to Tampa, Fla. Am planning to return to the reunion this summer, and shall be very much disappointed if I do not consummate my plans."

Mr. and Mrs. Alfred Lucas Atwood will issue invitations to-day for the wedding of their daughter, Florence Maude, to Mr. John J. Biddison ['04], Wednesday afternoon, May 20, at 5 o'clock, at their home, 415 Tyler street. The wedding will be of interest to a number of Topeka friends as Miss Atwood, who attended the high school and Washburn College, has a large acquaintance, and Mr. Biddison, who is now city editor of the *Arkansas Gazette*, in Little Rock, Ark., was formerly engaged in newspaper work in Topeka. The wedding will be a quiet home affair and about fifty invitations will be issued.—*Topeka Capital, May 6.*

Board of Instruction (concluded).

JACOB LUND, M. S. (K. S. A. C.) ..... Superintendent Heat and Power Department
JOHN H. MILLER, A. M. ..... Superintendent Farmers' Institutes
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.) ..... Secretary
CLARENCE L. BARNES, D. V. M. (Cornell) ..... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B. S. (Chicago) ..... Assistant Professor of Physics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.) ..... Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard) ..... Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.) ..... Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.) ..... Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K. S. A. C.) ..... Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago) ..... Assistant Professor of Mathematics

---

Miss Ada Rice, B. S. (K. S. A. C.) ..... Instructor in English
Miss Ella Weeks, A. B. (U. of K.) ..... Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount) ..... Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University) ..... Instructor in Veterinary Science
Robert E. Eastman, M. S. (Cornell University) ..... Instructor in Horticulture
Miss Ula M. Dow, B. S. (K. S. A. C.) ..... Instructor in Domestic Science
Theo. H. Scheffer, A. M. (Cornell University) ..... Instructor in Zoölogy
Herbert H. King, M. A. (Ewing College) ..... Instructor in Chemistry
John B. Whelan, B. S. (Nebraska) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Miss Gertrude Barnes ..... Assistant Librarian
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.) ..... Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.) ..... Foreman of Foundry
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C) ..... Assistant in Printing
Roy A. Seaton, B. S. (K. S. A. C.) ..... Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College) ..... Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale) ..... Assistant in Architecture and Drawing
Chas. Yost ..... Assistant in Heat and Power Department
Earle B. Milliard ..... Foreman of Blacksmithing
J. T. Parker, ... Assistant in Woodwork
J. D. Magee, A. M. (Chicago) ..... Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit) ..... Assistant in German
Miss Florence S. Latimer, B M. (Ferry Hall Seminary) ..... Assistant in Music
Miss Marjorie Russell (Mechanics' Institute) ..... Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.) ..... Assistant in Botany
Burton Rogers, D. V. M. (Iowa State College) ..... Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal) ..... Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.) ..... Assistant Chemist, Experiment Station
Edw. C. Crowley, Ph. B. (Yale) ..... Assistant in Chemistry
Hugh Oliver ..... Assistant in Heat and Power Department
Miss Charlaine Furley, B. A (Fairmount) ..... Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (U. of K.) ..... Assistant in Preparatory Department
Leland E. Call, B. S. (Ohio State University) ..... Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University) ..... Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.) ..... Assistant in English
William C. Lane, B. S. (K. S. A. C.) ..... Assistant in Physics
Louis H. Beall, A. B. (Denison) ..... Assistant in English
Miss Flora C. Knight, A. B. (Uni. of Wyoming) ..... Assistant in English
Miss Grace H. Woodward (Boston School of D. S.) ..... Assistant in Domestic Science
Miss Nellie Cave, B. M. (Univ. of Nebr.), (Chicago Music Coll.) ..... Assistant in Music
Miss Anna I. McKirahan ..... Assistant in Music
Miss Margaret Mack (K. S. N.) ..... Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.) ..... Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.) ..... Assistant in Botany
Charles E. Bassler, D. V. M. (K. S. A. C.) ..... Assistant in Veterinary Science
Miss Mary W. Hancock (Mechanics' Inst.) ..... Assistant in Domestic Art
S. W. McGarrah, A. M. (Grove City College) ..... Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.) ..... Assistant in Animal Husbandry
Arthur L. Peck, B. S. (Mass. Ag. Coll.) ..... Assistant in Horticulture
Kirk H. Logan, B. S. (U. of K.) ..... Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College) ..... Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University) ..... Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College) ..... Assistant in Preparatory Department
Loren Clark ..... Assistant in Printing
Miss Bertha M. Johnston (Simmons College) ..... Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.) ..... Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University) ..... Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.) ..... Assistant in Agronomy
Earle Brintnall, B. S. (Iowa State College) ..... Assistant in Dairy Husbandry
William Neill ..... Dairy Herdsman
G. A. Porteous ..... Herdsman
Wm. A. Lamb ..... Poultryman
Floyd Howard ..... Farm Foreman
William R. Lewis ..... Custodian

Historical Society

THE INDUSTRIALIST

Vol. 34 **No. 33**

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

The Industrialist.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

TERMS AND VACATIONS.

FALL TERM, 1907, THIRTEEN WEEKS.

Thursday, Friday, and Saturday, November 28, 29, and 30.....Thanksgiving vacation
Thursday and Friday, December 19, 20.....Examination at close of term

WINTER TERM, 1908, TWELVE WEEKS.

Monday, January 6.....Examination for admission, at nine A. M.
Tuesday, January 7.....Winter term begins
Tuesday, January 7.....Short courses in agriculture and dairying begin
Saturday, February 1.....Annual intersociety oratorical contest
Saturday, February 15.....Mid-term examination
Thursday, March 19.....Annual concert
Thursday and Friday, March 26, 27.....Examination at close of term

SPRING TERM, 1908, ELEVEN WEEKS.

Monday, March 30.....Examination for admission, at nine A. M.
Tuesday, March 31.....Spring term begins
Saturday, May 9.....Mid-term examination
Tuesday, May 19.....Beginning of summer course in domestic science
Tuesday and Wednesday, June 16, 17.....Examination at close of year
June 14 to 18.....Exercises of Commencement week
Thursday, June 18, at ten A. M.....Commencement
June 19 to September 16.....Summer vacation

FALL TERM, 1908,

Wednesday, September 16.....Examination for admission, at nine A. M.
Thursday, September 17.....College year begins

BOARD OF REGENTS.

HON. A. M. STORY, President.....Manhattan
HON. J. O. TULLOSS ['99], Vice-President.....Sedan
HON. J. S. MCDOWELL.....Smith Center
HON. GEO. P. GRIFFITH.....Hays
HON. EDWIN TAYLOR.....Edwardsville
HON. W. E. BLACKBURN.....Anthony
PRES. E. R. NICHOLS, Secretary *ex-officio*.....Manhattan

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
CHARLES WM. BURKETT, M. Sc. (Ohio State University).....Director Experiment Station
JOHN D. WALTERS, M. S. (K. S. A. C.).....Professor of Architecture and Drawing
JULIUS T. WILLARD, M. S. (K. S. A. C.).....Professor of Chemistry, Vice-Director Exp. Station
BENJ. L. REMICK, Ph.M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B. S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M. S. (K. S. A. C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph.M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M. S. (K. S. A. C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph.D. (Univ. of City of New York).....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B. S. (K. S. A. C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College).....Professor of Economics
JOHN V. CORTELYOU, A.M. (Uni. of Neb.), Ph.D. (Heidelberg).....Professor of German
OLOF VALLEY, B. M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D. V. S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B. S. A. (Iowa State College).....Professor of Animal Husbandry
WALTER E. KING, M. S. (Cornell).....Professor of Bacteriology
THOMAS J. HEADLEE, Ph.D. (Cornell).....Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U. S. A.....Professor of Military Science
JOHN C. KENDALL, B. S. (N. H. A. & M.).....Professor of Dairy Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art
MISS ANNE M. BOYD, A.B., Lib. Sci. (Millikin).....Librarian
ROBERT J. BARNETT, B. S. (K. S. A. C.).....Principal Preparatory Department

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., MAY 23, 1908. No. 33

Dry-Land Farming.

The Farmers' Institute Department has lately published an interesting and valuable pamphlet on Dry-Land Farming, prepared by Prof. A. M. TenEyck, of the Department of Agronomy. The paper was in part read at the annual meeting of the Coöperative Experiment Association of the great Plains Area, held at Lincoln, Neb., and was so well received that the professor has now published it as one of the institute series. The pamphlet covers twenty-five printed pages and may be obtained free by writing to the Farmers' Institute and Extension Department of this College. Following are a few excerpts from its pages:

"Drought-resistant crops, or crops which are adapted to 'dry-land farming,' may be divided into three quite distinct groups, as follows: (1) Early-maturing crops, which grow rapidly and ripen before the available soil moisture is used up, or before the hot, dry weather begins, such as winter wheat and early spring grains. (2) Crops which root deeply and gather their moisture supply from a large volume of soil, such as alfalfa and certain grasses. (3) Hardy, vigorous-growing crops which are able to cease growth when the soil becomes too dry or conditions become too unfavorable, and remain in a dormant state until the rain comes, when they make quick use of the favorable conditions, growing rapidly, simply reaching maturity a little later than would have been the case if they had been subject to no unfavorable conditions during the period of growth. These last are true drought-resistant crops, such as Kafir-corn, sorghum, buffalo-grass, and other native grasses of the Western Plains.

"The crops which belong to the class last named, as a rule, do not root deeply, but the plants develop an abundant and extensive growth of roots in the surface soil which enables them to take advantage of light rains and to quickly absorb a large part of the water which enters the soil, thus securing a greater supply of water under certain conditions and allowing less waste by surface evaporation than occurs with a deeper-rooting crop or with crops which make a less growth of fibrous roots in the surface soil. It

appears also that certain of these crops actually require less water to produce growth than some other crops which are not considered especially drought-resistant.

"Aside from the character which such crops possess of taking advantage of the conditions under which they grow, these drought-resistant crops are different in some way from ordinary crops in the quality named above, in that they are able to stop growing during unfavorable weather and with unfavorable soil conditions, renewing their growth again when conditions become better.

"This character in a plant is not well understood. It seems to be a characteristic which has been bred into the plant by continual exposure to the conditions under which it is able to grow. We find that most of the crops adapted for growing on the Western Plains have been imported from foreign countries which have a semiarid climate similar to the climate of the Western Plains. These crops have been bred and grown for centuries, perhaps, in the countries from which they have been brought, and the character of being drought-resistant has become a quality of the plant, the same as the character of being hardy in a cold climate has become the nature of certain varieties of fruit and of many crops.

"Without doubt, therefore, certain crops are more drought-resistant than others, but successful 'dry-land farming' depends largely upon the character of the soil, the preparation of the seed-bed and the culture which the crop receives. The only soils which may be made to produce crops without irrigation in the semiarid regions are soils which have great moisture-holding capacity. It takes water to produce drought-resistant crops as well as to produce crops grown under ordinary circumstances, and a thin soil underlaid by a gravelly or coarse, sandy subsoil will produce, if at all, only when water is supplied in sufficient quantity during the period of crop growth, while soil which retains moisture well may produce crops even without much rainfall during the growing season. Prof. H. B. Linfield, of the Montana Experiment Station, says on this subject: 'I have seen a paying crop grown without irrigation on land ranging from a clayey loam to almost sandy when the subsoil was not porous.'

"The presence of a large amount of humus in the soil also increases its moisture capacity and its power to retain water, and is an important requisite to insure against the injurious effects of drought. It is true of the soil in a large part of the West that it is lacking in humus, and for this reason its water-holding power is not so great as it might be, resulting often in low yields and crop failures in an unfavorable season.

"Experiments which have been conducted show that in their growth plants require a large amount of water. Prof. F. H. King, at the Wisconsin Experiment Station, found that cultivated crops withdrew from the soil during their period of growth from 2.4 to 5. 1 acre-inches of water, or 300 to 500 tons of water, for every ton of dry matter produced.

"From his experiments he has determined that one acre-inch of water is required to produce three and one-third bushels of wheat, or that nine acre-inches of water are sufficient to produce a thirty-bushel wheat crop if this water could all be used by the growing wheat. In like manner, one acre-inch of water is equivalent to five bushels of barley, five bushels of oats or six bushels of corn.

"According to his figures it would require only four and one-half acre-inches of water to produce a ton of clover hay, or a four-ton crop of clover hay could be produced by eighteen acre-inches of water. Two acre-inches of water were equivalent to one ton of corn-fodder, and a yield of six tons per acre would require only twelve and one-half acre-inches of water.

"Professor King's experiments were performed out-of-doors, but the crops were grown in cylinders and were not subject exactly to natural field conditions.

"In experiments which the writer conducted at the North Dakota Experiment Station in 1898-'99, it required on an average fifteen acre-inches of water to produce a thirty-bushel wheat crop, or one acre-inch of water was equivalent to two bushels of wheat. These results were secured in the field. The moisture content of the soil to a depth of six feet was determined at sowing time and again at harvest time. The loss of water from the soil plus the rainfall during the period of growth was the amount of water which was charged to the crop. (See North Dakota Exp. Sta. Bull. No. 48.)

"The seasons of 1903 and 1904 were very wet. Excessive rains fell and a considerable part of the water must have been lost by surface-drainage. None of the crops lacked for water. From these results it would appear that barley and oats require less water than the other grain crops, while emmer, which is classed as a drought-resistant crop, used more water per acre than any other small-grain crop, except flax.

"Corn used more water per acre than any other crop. This was due, in part, to its longer growing period. The relatively small amounts of water required to produce the crops of sorghum and Kafir-corn may be due, in part, to the fact that the crops

were planted several weeks later than the corn and had less rainfall charged to them than was charged to corn. The fact remains, however, that the amount of dry matter produced was greater with the Kafir-corn and sorghum than with the corn, and that an acre-inch of water produced more pounds of dry Kafir-corn or sorghum than of corn.

"The moisture determinations made in the field after the crops were harvested showed the following results: Comparing the soil in each plot to a depth of six feet, the Kafir-corn plot contained 0.69 per cent less water than the corn plot, while the sorghum plot contained 0.41 per cent less water than the corn plot. Thus the drought-resistant crops actually left the soil drier in the fall than did the corn.

"The results of this experiment indicate that the drought-resistant crops may use a large amount of water and tend to exhaust the supply of moisture stored in the soil to a greater degree than the crops which are not classed as drought-resistant. 'Dry-land farming' is therefore as much a question of soil culture or of conserving the soil moisture as of growing drought-resistant crops.

"Wheat is the money-making crop of a large part of the semiarid West. It is not particularly a drought-resistant crop, although certain varieties appear to succeed better than others in the dry districts. The hard Red Turkey or Russian wheat is the type or variety which has proved hardiest and most productive throughout the western part of the winter-wheat belt. In the spring-wheat states the standard sorts grown are Fife and Bluestem, which are also hard wheats. The Durum or Macaroni wheat is rapidly coming into use in the Northwestern states, and it appears to be hardier and more productive than the ordinary spring wheats. This wheat was introduced from Russia, where it has long been grown in a climate and under conditions similar to those of the western part of the Northwestern states. It is decidedly a 'dry-land farming' crop, and it is the hope of those interested in introducing this wheat that it may prove successful in districts where the rainfall is not sufficient or too uncertain to grow the common wheat, and thus extend profitable wheat growing still farther west and into the semiarid lands of the Mountain states.

"At present, with the varieties grown, the success of the wheat crop in the West is more largely due to the fact that the crop grows during a part of the year when drought is least apt to prevail than to the drought-resistant character of the crop. But wheat is a deep feeder and a rapid grower. The plant

draws its food and moisture from a large volume of soil and is able to withstand considerable unfavorable weather conditions; yet the crop is often materially injured and the yield decreased by drought during almost any period of its growth. By hot winds and unfavorable weather conditions a promising crop may be destroyed in a few days.

"Wheat cannot stop growing and remain dormant during an unfavorable period for growth as does Kafir-corn or sorghum. The grain must finish its growth and mature in about a certain period, whatever the conditions for growth may be.

"Spring wheat is not well adapted for growing in Kansas, but with sufficient moisture to start it in the fall, and with the usual spring rains, winter wheat is a profitable crop even in the western counties of the state, where the annual rainfall does not exceed fifteen to twenty inches.

"However, the methods of growing the crop are crude, and often the western farmer plants so many acres that he is unable to farm the land well, and the result is a poor crop if the season is at all unfavorable.

"Some farmers, however, are adopting better methods. Enough good farming has been done to prove that it pays to cultivate and till the land well. Mr. H. W. Campbell reports remarkable results from the practice of his system of culture on the Pomeroy model farm in Graham county, Kansas. For several years this farm was made to produce twice as much wheat per acre as the average crop in the surrounding country, with no other treatment of the soil except thorough tillage and cultivation.

"At the Fort Hays Branch Experiment Station, in Ellis county, enough has been accomplished in the five seasons since that Station was established to demonstrate that in the semiarid West good farming pays as well or even better than it does in the rich farming states of the Mississippi valley.

"The second great crop of central and western Kansas, and also in some sections of Nebraska, Oklahoma, and Texas, is alfalfa. To be sure, the crop is most successfully grown in those counties in Kansas which have sufficient rainfall to produce good corn crops, and in fact these two crops, corn and alfalfa, fit well together both in their relation to the soil and as a combination feed for stock of all kinds. Wherever it thrives well, there is no other crop grown which will produce so much forage of so high feeding value as alfalfa. Throughout central Kansas four cuttings of hay

are usually harvested each season, and a total yield of four tons per acre in a season is considered only a fair crop.

"As yet, alfalfa is not grown extensively in the western counties of the state, except in localities where irrigation is practiced, but the crop is gradually creeping up the river valleys and into the creek bottoms, each year pushing its area of successful culture a little farther west, and it has even succeeded on the uplands in many of the counties, where it was not thought possible to grow it a few years ago.

"Alfalfa starts slowly, and it is rather difficult, especially in the more unfavorable locations, to get a stand, but when the plants are once established they are extremely hardy, surviving drought and hot winds more successfully than almost any other crop. During periods of extreme drought alfalfa does not grow much; sometimes only one cutting is produced in a season on the uplands in western Kansas, but the plant through its deep and extensive root-system is able to get a sufficient supply of water to sustain life, and when rain comes it revives and grows anew.

"At the Kansas Station alfalfa roots have been traced to a depth of over nine feet, while at the Colorado Experiment Station Dr. W. P. Headden has washed out the roots of an old alfalfa plant to the depth of nearly twelve feet. Various reports have been made, without good authority, of finding alfalfa roots at even greater depths. It is without doubt one of the deepest rooting plants grown on the farm.

"Alfalfa will do more for western agriculture in the next fifty years than all the other crops which farmers may be able to grow in this region. The soil of western Kansas and of much of the Western Plains is usually rich in the mineral elements of plant-food, but, as stated before, it is often lacking in humus, which becomes especially noticeable if the land has been farmed continuously to wheat for a few years. By growing alfalfa it is possible to increase the supply of humus in the soil, and the roots of the plants penetrating deep into the subsoil disintegrate and deepen the soil, and altogether greatly improve its texture, giving it greater capacity to absorb and hold water. The beneficial effect on the soil of growing alfalfa is only incidental to the rapid introduction of the crop throughout the West. The great value of the crop as a money-maker is the main factor which is introducing it into the agriculture of the Central West. Where alfalfa can be successfully marketed or fed, no other crop grown in the West will yield so great a net profit per acre in a series of years."

The pamphlet, from whose pages these excerpts are culled,

discusses a large number of other more or less profitable dry-land crops, such as emmer, barley, winter rye, oats, flax, the sorghums, and the western grasses. It also contains chapters on dry-land crops in eastern Colorado, breeding methods in drought-resisting crops, systematic tillage, tillage and fertility, implements, deep plowing, mulching, disking, and harrowing.

The Kansas Federation of Women's Clubs.

Between two and three hundred club women from all over Kansas descended on Manhattan late Tuesday. They came here to attend the annual meeting of the State Federation of Women's Clubs.

Among the early arrivals was Mrs. Sarah Platt Decker, national president of the Women's Federation, with a delegation of about thirty women from Topeka. In the afternoon a conference of state and district officers was held at the Gillett hotel. Tuesday night a reception was given by the women's clubs of Manhattan at the newly completed $35,000 Y. M. C. A. building. It is estimated that between five and six hundred people passed the receiving line at this reception. In the receiving line were Mrs. Decker and the state and district officers.

The program began Wednesday, when addresses of welcome were given by Mrs. Charlotte F. Wilder, president of the Domestic Science Club; Miss Rose Barner, president of the Tuesday Afternoon Club, and E. R. Nichols, President of the Kansas State Agricultural College. The response was followed by a greeting from the General Federation of Women's Clubs by Mrs. Decker and the president's annual address by Mrs. Eustace H. Brown, of Olathe.

Then the department of philanthropy had its inning. Miss Cornelia Lee, of Manhattan, spoke of "Manhattan Philanthropy;" Mrs. Jessie L. Rowland, of McPherson, told of "The Philanthropist at Home;" Mrs. Nester Moore spoke on the subject "Wichita."

One of the principal speakers on Wednesday was the Rev. Mr. Everett Day, of Massachusetts, who talked on "The New Philanthropy." Rev. Mr. Day said the New Philanthropy consisted in remedying the cause instead of getting after the condition. And this was the work of the women's clubs, he said. "There are bad boys who need to be sent to the industrial schools," he said, "but let the men do that. It is the work of the women's clubs to get after their parents in a way that there will be no bad boys."

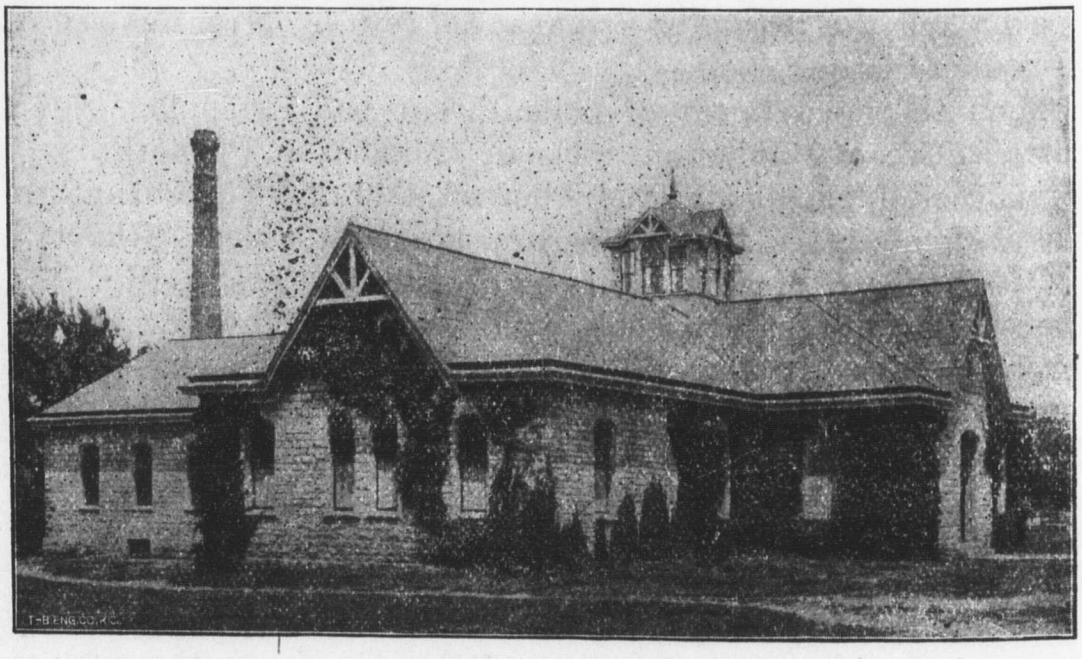
One of the interesting features of the day not on the program was a talk by Mrs. J. S. Simmons, of Hutchinson, on the work of

the Women's Kansas Day Club. This club is trying to raise enough money to buy the historic Pawnee Rock, near the town of Pawnee Rock on the old Santa Fe trail. Benjamin P. Unruh, the owner of the ground on which the rock stands, has been offered $3000 for the site, but has offered it as a gift to the Women's Kansas Day Club if they will spend $3000 improving the grounds and making a park of it. The women of the club are selling post-card views of Pawnee Rock, asking gifts of money, and working several other schemes to raise the $3000.

During the afternoon the department of library extension opened the program. The principal speakers were Mrs. James L. King, of Topeka, state librarian, who talked of "Library Extension in Kansas," and Mrs. May Belleville Brown, of Salina, who gave the federation "A Glimpse Into the Future."

The department of education and scholarships was next on the program. The feature of this part of the program was the talk on the State Agricultural College by the President, E. R. Nichols.

The College water-tower has made its journey from the old location north of the Engineering building to the new place, about 300 feet farther west, without a single mishap. When everything was properly prepared Contractor Geo. Hopper pushed it along the greased track as nicely as a piece of furniture. It has been safely anchored and connected with the water system.



Women's Gymnasium.

Local Notes.

Thursday, June 18, Commencement.

The juniors had a reception in Kedzie Hall Monday evening.

On another page our friends will find the program for Commencement Week.

Professor Walters is building a second cottage on his lots on north third street.

The seniors took an all-day's outing last Wednesday in Ingraham's grove, near Rocky Ford.

The Y. W. C. A. will give a "Rose Luncheon" on Kedzie Hall lawn on next Wednesday evening (May 27) from 5 to 7:30.

The annual catalogue is in the hands of the State Printer. Secretary Clemons tells us that it will contain 2189 names.

Professor TenEyck's recent bulletin on "Making Hay" gives the average hay value, in Kansas, in 1907, at $8.33 per acre and the authenticated hay value at $72.00 per acre.

Superintendent Rickman will move into the residence now being erected by Mrs. Minnie Alexander directly west of the Y. M. C. A. building as soon as it can be completed.

Contractor Henry Bennett, of the Veterinary Science Hall, commenced the roof work of the building this week by erecting several of the large roof trusses. The stone work will be completed in about two weeks.

The last *Students' Herald* was a double number published by the College Y. W. and Y. M. C. A. It contained the photos of the cabinets for 1907 of both associations and pictures of scenery from Cascade, Colo., where the Rocky Mountain Conference of the Y. M. C. A. and Y. W. C. A. will be held June 12 to July 20.

The Athenian Literary Society had a picnic on the classic banks of the Big Blue last Saturday evening. They had a royal good time. When they came home they sang:

"Jetzt gehen wir nicht heim—nicht heim—
Bis dass der Kukuk morgen schreit."

Veni, vidi, vici. The State track meet at Emporia Monday turned out as we expected. Our boys, for the second time in three years, took the State laurels. Ross took the pole vault, Dixon made off with the 100-yard dash, and Seng bagged all three of the weight events. Baker University took second place and Washburn seventh.

The President's office has recently undergone a complete renovation in the hands of the carpenters and painters. A new oak floor has been laid. The walls and ceiling have been painted in pleasing colors, with a broad stenciled border under the plaster cornice. New Venetian blinds have been provided for the windows and the fire-place has been painted in granite colors. The large room looks quite tasty.

Professor Willard attended the meeting of the Kansas City Section of the American Chemical Society last Saturday at Lawrence, the program consisting of a symposium of papers an addresses on topics relating to food legislation, inspection, and analysis. He gave a short address upon the "Relation of the Farmer to Food Legislation."

Just as we are going to press (Saturday morning at nine o'clock) we hear of the death of Miss Elsie Kammeyer, daughter of Prof. J. E. Kammeyer. She was taken sick about a week ago, with appendicitis. Miss Elsie was a sophomore, and was a very lovable little lady. The bereaved family has the sympathy of the entire College Faculty and students and of their many Manhattan friends.

The annual exhibition of the classes in physical training in the Auditorium Friday night of last week was a complete success in every respect, a credit to the young women who participated, and to Miss Barbour, their efficient teacher. The first part of the program was executed in the regulation "gym" suits and the second in pink and white flowing robes. The non-commissioned officers of the cadet battalion acted as ushers. The Auditorium was well filled with an appreciative audience.

L. B. Leach, president of the Wamego State Bank, and his daughter, Miss Virginia Leach, park commissioner of Wamego, and his sister, Miss Leach, accompanied by Miss Fitch, Mrs. Parsons and her son, Dr. Galen B. Parsons, composed a party who came up from Wamego Sunday to visit Manhattan and the College, and particularly the Horticultural Department. They were escorted through the College by Assistants R. E. Eastman and M. F. Ahearn.—*Nationalist.*

The class rooms, laboratories and walks were thronged all day Friday with members of the Kansas Federation of Women's Clubs and their friends and escorts from Manhattan. Several hundred visitors were here during the day to see for themselves something of the ways and means of the great Agricultural College of which they had heard and read so much. The center of attraction was, of course, the woman's building—Kedzie Hall—where Mrs. Calvin and Miss Becker and their assistants are teaching practical housekeeping to some six hundred young Kansas women.

The annual inspection by the United States War Department of the Cadet battalion will be held on Thursday, May 28. No excuse will be recognized for failure to report for duty at the regular drill hours. Special attention must be given to personal appearance on inspection. Complete uniforms, black shoes and white gloves will be worn. Rifles and equipments must be free from dirt, oil or rust, and belts must be blacked and brass parts polished. Cadets are enjoined to make every effort within their power to raise the efficiency of the battalion to a creditable degree for the coming annual inspection.—*Special Order of Lieutenant Boice.*

The Students' Coöperative Association is planning to build a large store and dining-hall this summer at the corner of Moro street and Manhattan Avenue. The building will measure 50 by 60 feet and will probably be built of cement concrete. It will contain a large store-room, a dining-hall, a kitchen, three private rooms, and a bath-room. Contract will be let as soon as the plans and specifications can be completed.

Mr. F. H. Maile, Eads, Colo., has ordered fifty copies of the "Dry-land Farming" pamphlet. In writing to Professor Ten-Eyck he says: "The pamphlet is the most comprehensive, brief statement I have yet seen on this subject. It gives both fact and philosophy in a clear, convincing style, and I feel sure it has met the conditions for dry farming in this, the south-central portion of eastern Colorado, as fully as for western Kansas. No important fact or principle is omitted as in so many of the tracts issued. It should be made the primary text for educating the settler in the semi-arid section, that he may understand and meet the conditions with which he is confronted in this clime."

The "Wagner Night Program" given by the Music Department of the College last Thursday evening in the Auditorium as a part of the program of the annual meeting of the Kansas Federation of Women's Clubs was a complete success and a credit to Professors Olof Valley, R. H. Brown, and their assistants. The program was preceded by an orchestra overture and an address by Mrs. Sarah S. Platt Decker, president of the National Federation. The Music Department rendered eight selections from Lohengrin, Tannhauser, Die Meistersinger, and Die Valkyrie. Two of the numbers were sung by Miss Mary Freeman, of Lindsborg. The choruses were sung by the Misses Smith and Biddison, and Messrs. Beighley, Nelson, and Porter. The Auditorium was well filled by an appreciative audience, and all agreed that the department had never rendered a more high-ordered program or had done better at any occasion.

Prof. H. M. Cottrell, formerly head of Agricultural Department of this College, now superintendent of farmers' institutes of Colorado Agricultural College, is introducing Kansas methods in that State. A short time ago he sent through the potato district of Colorado an institute train from which was preached the gospel of success in potato growing. The undertaking was in every way a success. The train consisted of a baggage-car and three passenger coaches. In the baggage-car was carried all the machinery needed in Colorado for raising large yields of potatoes—sorters, seed cutters, plows, planters, special cultivators, ridging and ditching machines, and diggers. A working model of a potato cellar was exhibited, as well as potatoes of the types which bring the highest prices in the markets and those having various defects. Such trains have been operated by this College with satisfactory results. The novelty attracts large and interested audiences, and a large territory is covered in a much shorter time than by other means.

The College ball team won its seventh consecutive victory last Saturday afternoon when they beat the Kansas Wesleyan team at the Manhattan Athletic Park. The game stood 13 to 1. On Tuesday the boys and a few rooters went to Topeka and won the eighth by beating Washburn College. The score was 1 to 0. On Wednesday they defeated the State Normal, at Emporia, 10 to 4.

A pamphlet on "Making Hay" has just been published by the Farmers' Institute Department of the Kansas State Agricultural College and has been mailed to all members of farmers' institutes in the State. It will also be mailed free to any one else on request. Professor Ten Eyck, the author, has written more pages of valuable matter for the farmers than any ten other men in Kansas, and this is a most timely article. In it he emphasizes the importance of *quality* in hay as well as in other crops. The chapters are "Cutting," "Curing," "Storing," and "Marketing." The author recommends the use of sheds, especially for alfalfa hay. The Kansas State Agricultural College has printed and mailed out more valuable literature to farmers this year than has any other agricultural college in America. The pamphlet may be had for the asking by addressing J. H. MILLER, Superintendent Agricultural College Extension, Manhattan, Kansas.

Alumni and Former Students.

E. H. Webster, '96, has changed his address from 215 The Ontario, Washington, D. C., to Vienna, Va.

Dr. D. M. Campbell, of Hiawatha, Kan., junior student a few years ago, visited the College this week. He and his partner are now editing the *Official Bulletin* of the Missouri Valley Veterinary Association.

G. W. Hanson, '00, of Marquette, has been visiting old friends and the College several days this week. Mr. Hanson is proprietor of the Novelty Manufacturing Company, and from appearances is enjoying prosperity.

Jessie M. Hoover, '05, has been elected Preceptress of the South Dakota School of Agriculture, which will open next fall. This is an adjunct to the South Dakota State College of Agriculture and Mechanic Arts, and prepares students for the college work.

L. G. Hepworth, '97, is one of the firm of the Urie-Hepworth Land Company, which has just moved into handsome offices in the Bank of Topeka, Topeka, Kan. The address is Room 207. H. P. Richards, '00, has quit the railroad business and associated himself with this company.

Allie (Peckham) Cordry, '82, Parsons, Kan., Lizzie (Cox) Kregar, '80, Junction City, Kan., Bonnie (Adams) Wilkin, '99, Hoxie, Kan., and Daisy (Hoffman) Johntz, '00, Abilene, Kan., were among those who attended the meeting of the State Federation of Women's Clubs held in Manhattan this week.

Commencement Week, 1908

Sunday, June 14

Baccalaureate Sermon, College Auditorium, 4 p. m., Rev. Robert E. L. Jarvis, D. D., Pastor Presbyterian Church, Winfield, Kansas.

Monday, June 15

Recital by Music Department, College Auditorium, 8 p. m.

Tuesday, June 16

Examinations from 8:35 a. m. to 2:40 p. m.

Senior Play to Invited Guests, College Auditorium, 8 p. m.

Wednesday, June 17

Examinations from 8:35 a. m. to 11:50 a. m.

Business Meeting Alumni Association, 2:00 p. m.

Class and Society Reunions, 3:30 to 6 p. m.

Triennial Alumni Address, College Auditorium, 8 p. m., Ernest F. Nichols, '88, Professor of Experimental Physics, Columbia University, New York.

Thursday, June 18

Annual Address, College Auditorium, 10 a. m., Dr. Albion W. Small, Dean of Graduate College, Professor of Sociology, University of Chicago.

Presentation of Diplomas

Cadet Band Concert, College Auditorium, 2 p. m.

Military Drill, 3 p. m.

Triennial Reunion of Alumni and Invited Guests, Young Men's Christian Association Building, Corner Fremont and 11th Streets, 7:30 p. m.

Board of Instruction (concluded).

JACOB LUND, M. S. (K. S. A. C.).....Superintendent Heat and Power Depart
JOHN H. MILLER, A. M.....Superintendent Farmers' Instit
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.).....Secreta
CLARENCE L. BARNES, D. V. M. (Cornell).....Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B. S. (Chicago).....Assistant Professor of Physics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.).....Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.).....Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard).....Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.).....Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.).....Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K. S. A. C.).....Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago).....Assistant Professor of Mathematics

---

Miss Ada Rice, B. S. (K. S. A. C.).....Instructor in English
Miss Ella Weeks, A. B. (U. of K.).....Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount).....Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University).....Instructor in Veterinary Science
Robert E. Eastman, M. S. (Cornell University).....Instructor in Horticulture
Miss Ula M. Dow, B. S. (K. S. A. C.).....Instructor in Domestic Science
Theo. H. Scheffer, A. M. (Cornell University).....Instructor in Zoölogy
Herbert H. King, M. A. (Ewing College).....Instructor in Chemistry
John B. Whelan, B. S. (Nebraska).....Instructor in Chemistry
William L. House.....Foreman of Carpenter Shop
Miss Gertrude Barnes.....Assistant Librarian
Louis Wabnitz.....Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.).....Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.).....Foreman of Foundry
Miss Emma J. Short.....Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.).....Assistant in Domestic Art
Miss Kate Tinkey.....Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C.).....Assistant in Printing
Roy A. Seaton, B. S. (K. S. A. C.).....Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College).....Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.).....Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale).....Assistant in Architecture and Drawing
Chas. Yost.....Assistant in Heat and Power Department
Earle B. Milliard.....Foreman of Blacksmithing
J. T. Parker.....Assistant in Woodwork
J. D. Magee, A. M. (Chicago).....Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit).....Assistant in German
Miss Florence S. Latimer, B. M. (Ferry Hall Seminary).....Assistant in Music
Miss Marjorie Russell (Mechanics' Institute).....Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.).....Assistant in Botany
Burton Rogers, D. V. M. (Iowa State College).....Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal).....Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.).....Assistant Chemist, Experiment Station
Edw. C. Crowley, Ph. B. (Yale).....Assistant in Chemistry
Hugh Oliver.....Assistant in Heat and Power Department
Miss Charlaine Furley, B. A. (Fairmount).....Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (U. of K.).....Assistant in Preparatory Department
Leland E. Call, B. S. (Ohio State University).....Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University).....Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.).....Assistant in English
William C. Lane, B. S. (K. S. A. C.).....Assistant in Physics
Louis H. Beall, A. B. (Denison).....Assistant in English
Miss Flora C. Knight, A. B. (Uni. of Wyoming).....Assistant in English
Miss Grace H. Woodward (Boston School of D. S.).....Assistant in Domestic Science
Miss Nellie Cave, B. M. (Univ. of Nebr.), (Chicago Music Coll.).....Assistant in Music
Miss Anna I. McKirahan.....Assistant in Music
Miss Margaret Mack (K. S. N.).....Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.).....Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.).....Assistant in Botany
Charles E. Bassler, D. V. M. (K. S. A. C.).....Assistant in Veterinary Science
Miss Mary W. Hancock (Mechanics' Inst.).....Assistant in Domestic Art
S. W. McGarrah, A. M. (Grove City College).....Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.).....Assistant in Animal Husbandry
Arthur L. Peck, B. S. (Mass. Ag. Coll.).....Assistant in Horticulture
Kirk H. Logan, B. S. (U. of K.).....Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College).....Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University).....Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College).....Assistant in Preparatory Department
Loren Clark.....Assistant in Printing
Miss Bertha M. Johnston (Simmons College).....Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.).....Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University).....Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.).....Assistant in Agronomy
Earle Brintnall, B. S. (Iowa State College).....Assistant in Dairy Husbandry
J. B. Parker, M. A. (Ohio State University).....Assistant in Entomology
William Neill.....Dairy Herdsman
G. A. Porteous.....Herdsman
Wm. A. Lamb.....Poultryman
Floyd Howard.....Farm Foreman
William R. Lewis.....Custodian

Historical Society

THE INDUSTRIALIST

Vol. 34 No. 34

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

The Industrialist.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

TERMS AND VACATIONS.

FALL TERM, 1907, THIRTEEN WEEKS.

Thursday, Friday, and Saturday, November 28, 29, and 30.....Thanksgiving vacation
Thursday and Friday, December 19, 20.....Examination at close of term

WINTER TERM, 1908, TWELVE WEEKS.

Monday, January 6.....Examination for admission, at nine A.M.
Tuesday, January 7.....Winter term begins
Tuesday, January 7.....Short courses in agriculture and dairying begin
Saturday, February 1.....Annual intersociety oratorical contest
Saturday, February 15.....Mid-term examination
Thursday, March 19.....Annual concert
Thursday and Friday, March 26, 27.....Examination at close of term

SPRING TERM, 1908, ELEVEN WEEKS.

Monday, March 30.....Examination for admission, at nine A.M.
Tuesday, March 31.....Spring term begins
Saturday, May 9.....Mid-term examination
Tuesday, May 19.....Beginning of summer course in domestic science
Tuesday and Wednesday, June 16, 17.....Examination at close of year
June 14 to 18.....Exercises of Commencement week
Thursday, June 18, at ten A.M.....Commencement
June 19 to September 16.....Summer vacation

FALL TERM, 1908,

Wednesday, September 16.....Examination for admission, at nine A.M.
Thursday, September 17.....College year begins

BOARD OF REGENTS.

HON. A. M. STORY, President.....Manhattan
HON. J. O. TULLOSS ['99], Vice-President.....Sedan
HON. J. S. MCDOWELL.....Smith Center
HON. GEO. P. GRIFFITH.....Hays
HON. EDWIN TAYLOR.....Edwardsville
HON. W. E. BLACKBURN.....Anthony
PRES. E. R. NICHOLS, Secretary *ex-officio*.....Manhattan

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
CHARLES WM. BURKETT, M. Sc. (Ohio State University).....Director Experiment Station
JOHN D. WALTERS, M. S. (K. S. A. C.).....Professor of Architecture and Drawing
JULIUS T. WILLARD, M. S. (K. S. A. C.).....Professor of Chemistry, Vice-Director Exp. Station
BENJ. L. REMICK, Ph. M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B. S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A. B. (U. of K.), M. S. (K. S. A. C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph. M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S. B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M. S. (K. S. A. C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A. M. (U. of R.), Ph. D. (Univ. of City of New York).....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B. S. (K. S. A. C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College).....Professor of Economics
JOHN V. CORTELYOU, A.M. (Uni. of Neb.), Ph. D. (Heidelberg).....Professor of German
OLOF VALLEY, B. M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D. V. S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B. S. A. (Iowa State College).....Professor of Animal Husbandry
WALTER E. KING, M. S. (Cornell).....Professor of Bacteriology
THOMAS J. HEADLEE, Ph. D. (Cornell).....Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U. S. A.....Professor of Military Science
JOHN C. KENDALL, B. S. (N. H. A. & M.).....Professor of Dairy Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art
MISS ANNE M. BOYD, A. B., Lib. Sci. (Millikin).....Librarian
ROBERT J. BARNETT, B. S. (K. S. A. C.).....Principal Preparatory Department

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., MAY 30, 1908. No. 34

Graduate School of Agriculture—Third Session, July 6 to 31, 1908.

The first session of the Graduate School of Agriculture was held at Columbus, Ohio, in July, 1902, under the auspices of Ohio State University. This session was quite successful, being attended by 75 students from 28 states and territories, Canada, and Argentina. The continuance of the school, therefore, seemed desirable. At the convention of the Association of American Agricultural Colleges and Experiment Stations held at Washington, D. C., in November, 1905, the association voted to assume responsibility for the graduate school and committed its management to the standing committee on graduate study. Under these auspices the second session of the school was held at the University of Illinois during the month of July, 1906. The total enrolment of this school was 131, of whom 91 were classed as students. These came from 34 states and territories, Hungary, and India. On invitation of Cornell University and the New York Agricultural Experiment Station, arrangements have been made to hold the third session at Ithaca and Geneva, N. Y., during the month of July, 1908.

By the consent of the Honorable Secretary of Agriculture, the director of the Office of Experiment Stations will again act as its dean, and other officers of the department will be on its faculty.

The director of the College of Agriculture at Cornell University, as chairman of the committee in charge of the school, and other members of the faculty of the University, will participate in the work of the Graduate School of Agriculture. The director and staff of the New York Agricultural Experiment Station will also take part in the school.

Public exercises in connection with the opening of the third session of the Graduate School of Agriculture will be held Wednesday, July 8, 1908, at 8 P. M., in the agricultural building of Cornell University. The public as well as the faculty and students of the school are cordially invited to these exercises. It is expected that addresses will be given by Hon. James Wilson, Sec-

retary of Agriculture; Dr. H. C. White, professor of chemistry, University of Georgia, and chairman of the executive committee of the Association of American Agricultural Colleges and Experiment Stations; Dr. J. G. Schurman, president of Cornell University; Dr. L. H. Bailey, director of the New York State College of Agriculture at Cornell University, and chairman of the committee on graduate study of the Association of American Agricultural Colleges and Experiment Stations; Dr. W. H. Jordon, director of the New York Agricultural Experiment Station; and Dr. A. C. True, director of the Office of Experiment Stations, and dean of the Graduate School of Agriculture.

The purpose of the Graduate School of Agriculture is to give advanced instruction in the science of agriculture, with special reference to the methods of investigating agricultural problems and teaching agricultural subjects.

The school will convene at the new agricultural buildings of Cornell University, where most of the sessions will be held. Some sessions may be held at the New York Agricultural Experiment Station at Geneva, which is forty miles from Ithaca, and easily reached by railroad transportation. Special circulars describing the facilities available to the graduate school will be issued.

The school will be in session four weeks, from July 6 to 31, 1908. The school day will consist of four periods of one hour each—8 to 9, 9:30 to 10:30, and 11 to 12 A. M., and 2 to 3 P. M., and one seminar period 3 to 5 P. M., except on Saturdays, when there will be exercises in the forenoon only. Facilities for registration will be provided on Saturday, July 4, and the exercises of the school will begin promptly at 8 A. M., Monday, July 6.

Only persons who have completed a college course and taken a bachelor's degree will be admitted to the privileges of the school, except that admission may be granted to non-graduates who are recommended by the faculties of the colleges with which they are associated as persons properly qualified to profit by advanced instruction in agriculture.

Instruction will be given in seven main lines: Biochemistry, agronomy, horticulture, entomology, dairy husbandry and dairying, poultry, and veterinary medicine.

The hours for these courses have been arranged as follows: 8 to 9 and 11 to 12 A. M., agronomy, horticulture, dairy husbandry and dairying; 9:30 to 10:30, biochemistry and entomology; 11 to 12 A. M., poultry; 2 to 3 P. M., veterinary medicine.

The course in biochemistry will include topics in chemistry in its relation especially to animal life.

The course in agronomy will include soil physics, chemistry, and bacteriology; and the culture, fertilization, irrigation and drainage of field crops.

The course in horticulture will include topics relating to the production of different kinds of horticultural plants, and also studies in plant physiology and pathology.

The course in entomology will include topics relating to the life history, parasites, and means of repression of injurious insects.

The course in dairy husbandry and dairying will include principles of breeding, nutrition, and management of dairy animals, the handling and marketing of milk, manufacture of butter and cheese, and dairy bacteriology and sanitation.

The course in poultry will include topics relating to the embryology, breeding, nutrition and management of different kinds of poultry.

The course in veterinary medicine will include selected topics relating to a few of the principal diseases of animals.

The Saturday morning periods and Wednesday and Friday evenings will be devoted to conferences on topics of general interest relating to agricultural education. There will also be social assemblies and visits to prominent agricultural establishments.

The summer session of Cornell University begins July 6, and closes August 14. At this session more than 100 courses, largely in the natural sciences, are offered with special reference to the needs of teachers. Members of the Graduate School of Agriculture will be welcomed at evening lectures and other exercises of the summer session. On each Monday evening an address will be given on the present status of one of the natural sciences.

A graduate school in home economics under the auspices of a committee of teachers of home economics will also be held in Ithaca. Correspondence should be addressed to Miss Martha VanRensselaer, Ithaca, N. Y.

General conferences on the following topics have been tentatively planned: Agricultural pedagogics; secondary agricultural schools; elementary instruction in agriculture; extension work in agriculture; the inspection and demonstration work of the experiment stations; editing of station publications; student organizations in agricultural colleges; rural economy. At these conferences addresses are expected from Hon. W. M. Hays, Assistant Secretary of Agriculture; Dr. E. E. Brown, U. S. Commissioner of Education; Pres. G. C. Creelman, Ontario Agricultural College; Pres. K. L. Butterfield, Massachusetts Agricultural College; Prof. Jas. H. Robertson, Macdonald College; Dr. E. H. Jen-

kins, Director Connecticut Agricultural Experiment Station; Dr. E. W. Allen, Assistant Director U. S. Office of Experiment Stations; D. J. Crosby, Expert in Agricultural Education, U. S. Office of Experiment Stations; Prof. John Hamilton, Farmers' Institute Specialist, U. S. Office of Experiment Stations; Dean J. E. Russell, Teachers College, Columbia University; Dean T. F. Hunt, School of Agriculture, Pennsylvania State College, and Director Pennsylvania Agricultural Experiment Station, and members of the faculty of the Graduate School of Agriculture.

The graduate school is in charge of the Association of American Agricultural Colleges and Experiment Stations, which is represented by its committee on graduate study, consisting of the following members: Director L. H. Bailey, of New York, chairman; Dr. H. P. Armsby, of Pennsylvania; Pres. M. H. Buckham, of Vermont; Pres. R. H. Jesse, of Missouri; Pres. W. O. Thompson, of Ohio; and Pres. Brown Ayres, of Tennessee.

By vote of the Association of American Agricultural Colleges and Experiment Stations, a matriculation fee of ten dollars will be charged each student for the whole session or any part thereof. No laboratory fees will be charged. Board and room may be obtained in the neighborhood of the University for from $6.50 to $8 a week.

All correspondence relating to membership in this school should be addressed to Prof. G. N. Lauman, Registrar, College of Agriculture, Cornell University, Ithaca, N. Y.

From Italy.

Professor Walters has received an interesting letter from Italy, written by Dr. A. Emch, formerly professor of graphic mathematics at this College. Mr. Emch, who is at present professor of mathematics at the Cantonal College of Solothurn, Switzerland, attended the International Mathematical Congress at Rome, early in May. He writes:

"I spent a part of my spring vacation in Italy, the dream of European literary men and artists. Having been invited by the 'Circulo Matematico di Palermo,' of which I am a member, to take part in the deliberations of the Fourth International Mathematical Congress at Rome, and to deliver a lecture, it was possible to secure a special appropriation from our state government to pay a part of my expenses. In Rome I saw again a great number of mathematicians which on a similar occasion I met in St. Louis. A short account of the work of the Congress which appeared in one of our local papers was sent to you some time ago.

"The days spent in the old historic city, with the monumental structures of the modern 'Regno d' Italia,' will never be forgotten. The whole greatness of the old Romans and their history is vividly realized from the observation and study of the ruins in the 'Palatino,' the 'Forum Romanum,' the 'Colosseum,' etc., and all this, together with the rapidly pulsating life of to-day, makes Rome a grand cosmopolitan city, one of the most interesting capitals of the world.

"To see something of the country Professor Gubler, of Zürich, and I made an excursion to 'Frascati,' across the celebrated 'Campagna' at a distance of about twenty miles from Rome. Frascati, at the foot of the Albanian mountains (the old Tusculum), where Cicero had his summer residence and where Emperor Nero used to take a rest after many days of debauchery, is a typical Italian country town and is now renowned for its most exquisite wines, olives, lemons, and oranges. You can easily imagine that we duly sampled the Dionysian elixirs.

"From Rome I went to Naples, the magic town of which the Italians say: 'Vedi Napoli e poi mori.' Naples is more typically Italian than Rome, and has without exaggeration one of the most beautiful locations on earth. Since 1884, the time of the great cholera epidemic, Naples has wonderfully improved. They have torn down over 17,000 houses, and entire quarters and streets of the city have been rebuilt. The natives exhibit the specific Southern type, entirely different from the Milanese. Whenever possible the Neopolitans live on the street, and this gives the streets a picturesque character not to be found in Northern Italy. Here, in 'dolce Napoli,' I saw the sea again, the Mediterranean. For more than an hour I sat on the shore looking at the Italian war vessels, the merchant steamers, the brown weather-beaten sailors, and the other busy crowd. Then my eye would wander away to the far horizon. My thoughts did not stop there—they crossed the Atlantic to New York—to the far West! It is now nearly three years since I saw the ocean last. Maybe it will not be long before we see the Atlantic again.

"Mount Vesuvius was harmless and the smoke from the crater simply resembled a small camp-fire on the mountain-top. The day when I intended to climb the volcano it rained and as I could stay no longer I left for Genoa, the second great seaport of Italy. This city also is beautifully located on the gulf of like name and resembles in most respects one of the great towns of central Europe. Here I stayed but a few days.

"But as it might tire you to hear of further details I shall close

this superficial sketch of my Italian journey. It was the first time that I traveled for greater distances without my family. Unfortunately, it could not be arranged differently. In Genoa I bought some nice presents for my dear ones, and then went through the great Simplon tunnel, back to Switzerland. In going I had taken the Gotthard line."

Dangerous Advice To Farmers.

The food laws of the state and nation are usually supposed to have little application to farmers except by way of protecting them against imitations or adulterations practiced by the members of other vocations. Perhaps on this account they would be more likely to be misled by advice to use methods of an illegal nature, as their attention has not been drawn to such things to as great an extent as has been the case with other manufacturers, for the farmer is a manufacturer, as well as a producer of raw materials. The May number of the Bulletin of the Interstate Cottonseed Crushers' Association contains a proposition that is little less than astounding in its audacity or ignorance, as the case may be.

The Bulletin is published ostensibly for the purpose of promoting the legitimate use of all of the products of cottonseed. It is therefore quite surprising to find on the third page of the cover, in prominent type, directions that purport to be "To improve the quality and increase the quantity of butter," in which the addition of cottonseed oil to cream just before churning is seriously recommended. The claim is made that it hastens the coming of the butter, assists in its collection, improves the quality of the butter and buttermilk, and "being returned as butter will give with the better collection of the butter-fat an increased yield of a pound to a pound and a half of butter, and profit equal to the difference between the selling price of the butter and the cost price of the oil." This with a three-gallon churning. It will be seen that it is recognized that the cottonseed oil becomes a part of the product and is sold with the butter.

The purpose of this article is to call attention to the fact that any such procedure is contrary to all the food laws of the country. The product obtained would be oleomargarine under the definition of Federal laws, and to be legally manufactured the maker must pay a special tax of $600 per annum. Furthermore, any one manufacturing oleomargarine without having paid the special tax, as required by the law, is liable to a fine of not less than $1000 in addition to the payment of the tax. If the oleomargarine has any-

thing used in it which gives it such a color as to resemble butter of any shade of yellow, it is taxed 10 cents per pound.

From the preceding it will be seen that the farmer who adopts the advice of this bulletin will be liable to pay very dearly if it comes to the notice of the internal revenue officers. Should he engage in this openly and legally it is obvious that the manufacturer's tax and the tax per pound would make it a commercial failure.

Not only would the farmer who manufactures oleomargarine and places it upon the market be liable to the punishment referred to, but the dealers detected in handling his product, even if inadvertently, would be subject to heavy fines unless they had previously paid the special dealer's tax, which is $480 per annum for wholesalers and $48 per annum for retailers. It would be hard to find a more pernicious bit of advice so prominently displayed.

J. T. WILLARD.

The Enrolment.

The new annual catalogue will contain the names of 2189 students. This number will be increased when the students of the summer school in domestic science have generally enrolled. There are 35 new students in this course, and more will be added inside of a week or two. The records for the past ten years are as follows:

1898-'99	870
1899-'00	1094
1900-'01	1321
1901-'02	1396
1902-'03	1574
1903-'04	1605
1904-'05	1462
1905-'06	1690
1906-'07	1937
1907-'08	2189

The only year in the ten showing a reduction of names is 1904-'05, and this was due to a considerable increase in the entrance requirements and the incidental fee. It is safe to say that the enrolment for the past two or more years has been above that of any institution west of the Missouri river.

Supt. J. H. Miller, of the Department of Agricultural College Extension, will begin visiting teachers' institutes next week. He expects to visit about twenty-five institutes this summer, presenting the claims of agriculture as a school study.

Program for Spring Term, 1908, Showing Instructors, Subjects, and Number in Class.

Instructor.	First Hour.	Second Hour.	Third Hour.	Fourth Hour.	Fifth Hour.	Sixth Hour.	Seventh Hour.	Eighth Hour.
Walters	Specifications..8	Sp. Students...6	Trusses.....10	Home Arch....4	Arch. Composition and Modeling..8			
Weeks	Object Drawing.....Tu 9, W 8		Object Drawing.....Tu 12, W 17		Object Drawing.....Tu 19, W 17			
	Freehand Drawing.....Th 15, F 9		Freehand Drawing.....Th 16, F 10		Freehand Drawing.....Th 17, F 9			
Brandt	Geom. Drawing .....S 28		Geometrical Drawing.....S 23		Geometrical Drawing.....Th 9, F 15			
	Elementary Projection...Tu 8, W 4		Elementary Projection...Tu 9, W 3		El. Projection.....Tu 16, W 15, S 15			
Willard			Ag. Chem.....30					
King		Adv. Inorg. Chem...6		Chemistry IV..31	Chemistry III. 34, and Lab 38			
Crowley	Chemistry III and	Laboratory...74			Chemistry V Lab. T+T, 28, W+F 36			
Sieber					Chemistry II Lab.....T 21, W 26			
					Chemistry IV Lab. T+T 18, W+F 11			
Whelan	Chemistry II..33		Chemistry II..25	Chem. V....43-36				
Remick	Anal. Geom...23	Anal. Geom...12	Anal. Geom...26	Def. Intreg....15				
				Diff. Equations....27				
Andrews	Int. Calculus..23	Algebra III....29	Algebra IV....33	Algebra IV....24				
Zeininger	Algebra IV...20	Algebra IV....16	Geometry I....17	Geometry I....20				
Magee	Geometry II..22	Geometry II..36			Algebra II.....9	Algebra III....17		
Nesbit			Geometry II..32	Algebra III....21	Algebra IV....12	Geometry I ...20		
McGarrah			Algebra I.....13	Algebra II....24	Geometry II..22	Geometry II..19		
Porter	Geometry I....29	Trigonometry 48	Algebra II....27	Trigonometry 23				
Eyer	A. C. Mach....23	Dynamo Design ...23	Power Stations....23		Alt. Current Lab.....T+T 11, W+F 12			
Hamilton		Physics IV....18	El. Physics....32		Physics Lab..Tu 8, W 10, Th 29, F 26			
Lane	Elementary Physics Lab..Th 11, F 7		El. Physics Lab. .....Th 13, F 16		Alt. Current Lab..T+T 11, W+F 12			
Logan	Physics IV.....9	Physics IV....23			Physics IV Lab..T+T+S 14, M+W+F 18			
Freeman			Botany I ..39	Botany II.....43				
Bergman	Botany I.....34		Botany II Lab.....T 15, W 23, T 14, F 18		Botany II.....32			
Stevens		Botany II.....54	Botany II.....45		Botany II Lab.....T 27, W 28, T 28, F 27			
Monroe	Botany II Lab.....T 22, W 16, T 13, F 13				Botany I.....27	Botany II.....27		
McKeever	Ethics.....25	Meth. and Mgt.....19		Psychology....24				
McCormick	Engineering Laboratory III 8				Shop Lect. II....S 80	Shop Lect. IV....S 10		
Potter	App. Mech. II..7	Thermody. II., 6	Hydraulics.....8	Valve Gears..11	M. Draw. IV. T+T 22		Shop Lectures VII..F 6	
Seaton		Kinematics....30	Hydraulics....18		Mech. Drawing I...T 13, W 14, T 13, F 10			
House	Woodwork I.....T+T 22		Woodwork I.....T+T 12		Woodwork I.....T+T 23			
	Woodwork II.....W+F 30		Woodwork II.....W+F 28		Woodwork II.....W+F 25			
					Pattern Making.....T 14, W 17, T 15			
Wabnitz					Machine Shop.....T 7, W 10, T 3		Machine Shop.....W 6, T 5, F 8, S 19	
Ridenour	Foundry.....M 9				Foundry.....T 4, W 6, T 1, F 8		Shop Lect. I.....S 50	
Milliard	Blacksmithing I.....W+F 21		Blacksmithing I.....W+F 21		Blackg. I.....W+F 21; II, T 20, T 13		Blacksmithing I.....T+T 12	
Dickens	Horticulture..37	Land. Gardening....8		Veg. Gard.....29				
Eastman		Horticulture..28	Dendrology.....M 8		Floriculture.....9			
Peck			Horticulture Lab., T+T 25, W+F 13		Horticulture Lab.....M 1-4, 5			
Brink	Rhetoric II ..24	Am. Lit.....10	Eng. Lit. II ...20	Eng. Lit. 12				
Ward		Rhetoric II....36	German II.....19	Adv. Comp....20	Classics.....20			
Rice	Rhetoric I.....25	Classics..... 21			Composition..16	Composition..18		
Beall		Rhetoric I.....24	Composition..28	Rhetoric I.....19		Readings.....13		
Leonard	Readings.....12	Adv. Comp....31			Adv. Comp....24	Rhetoric I.....27		
Knight	Composition..20	Composition..24	Classics.....14	Readings.....19				

Call		Soils...2			Soil Survey...5				
Knight		Farm Mech ..32	Agriculture...33						
Calvin			Therapeutic Cookery (1)...30		Home Nurs. (2)...23				
Dow			Domestic Science III...16						
Willis			Domestic Science III...17						
Russell	Elementary Cooking...20		Domestic Science III...21						
Woodward		Elective...12			Elective...12				
Johnston		Elective ...2			Elementary Cooking...12				
Price	Am. History..40	Civics ...40	Civics ...45	Am. History..39					
Kammeyer	Economics....30	Pub. Spkg.II..12	Pub. Spkg.II..24	Pub Spkg. II..45-49	Pub. Spkg.II..25				
Cortelyou	German VI....38	German III....18	German III....24	German VI.....4	Special 4				
Meinzer	German III...17	German II.....19	Rhetoric I.....24	German III....16					
Valley	Singing.....21	Singing.....21	Singing.. 25	Singing.....22	Singing.....18	Singing 10	Chorus.noon 100		
Brown	Violin.....12	Mandolin.....11	Guitar.....5	Violin 8	Band Inst.....24	Violin 19	Band 33		
Latimer	Piano.....13	Piano 5	Piano.....10	Piano.....11	Piano.....8	Piano.....10			
Cave	Piano.....12	Piano 11	Piano.....12	Piano.....13	Piano.....12	Piano.....9			
McKirahan	Piano.....11	Piano 3	Piano.....11	Piano.....11	Piano.....9	Piano.....9			
Schoenleber		Mat.Med. III..12	Medicine VI...4						
Goss	Comp. Phys...13		Physiology....46	Physiology....50	Phys. Lab.....T 22, W 22, T 23, F 22				
Rogers	Surg. Anat....10	Op. Surgery ...4	Anatomy III...5	Anatomy III...6	Dissection .....Mornings 11				
Wheeler	An. Breeding..32	Adv. Feeding..3	Stock Feed'g.38						
King	Bacteriology..25	Bacteriology..17	Bacteriology Laboratory.....13		Bacteriology Laboratory.....11-16				
Headlee-Dean	Entomology ..37	Entomology ..33	Ent. Lab.....T 11, W 17, T 8, F 14						
Scheffer			Zoölogy.....18	Ent. Lab.....50					
Rickman-Rodell	Printing..... .5	Printing 3	Printing.....2	Printing.....2	Printing.....T+T 4		Printing.....9		
Barbour			Phys. Train...16	Phys. Train....23	Phys. Train....30		Phys. Train...33		
Becker			Sewing III.....T+T 15		Sewing I.....W+F 7				
Cowles			Sewing III.....T+T 18		Sewing II.....W+F 19, I 7				
Stump					Sewing III.....T+T 22				
Hancock	Sewing I.....20		Sewing II.....W+F 22		Sewing III.....23				
Barnett	Algebra I.....18	Bookkeeping..28		Bookkeeping..21		Bookkeeping..16			
Holroyd	Algebra III...24	Algebra II....32			Algebra II....19	Algebra I.....14			
Short	Anc. History..17	Med. History..21	Anc. History..23	Med. History..29		Phys. Geog.II..9			
Reynolds	Phys. Geog.I..16	Phys.Geog.II..16		Phys.Geog.II..15					
Furley	Geography.....6	Physiology....15	Grammar A...24	Grammar B....7					
Mack	Med. History..22				Anc. History..11	Med. History..14			
Gordon	Arithmetic A.30	Arithmetic B..7	U. S. Hist. B...7	U. S. Hist. A..19					
Justin					Adv. Gram....32				
Lund					Traction Engine Practice.....				54

Local Notes.

Miss Ella Weeks visited her parents at Lincoln, Kan., over Sunday.

Miss Jessie M. Vogt, State students' secretary of the Y. W. C. A., will be here to-day (Saturday.)

Professor Storm, of Iowa Agricultural and Mechanical College, was a visitor on the "Hill" last Monday.

Supt. R. K. Farrar, '96, of Osborne, Kan., was here last Wednesday looking for a teacher of science for his school.

The girls of the Y. W. C. A. will serve a tea on the lawn near Kedzie Hall next Thursday evening. Spreads will be ready at 5 o'clock.

Mrs. Henrietta Calvin has sold her suburban home on College Hill to Mr. Carl Elling, assistant in the Animal Husbandry Department.

The Department of Architecture has lately added to its growing collections of architectural illustrations a lithograph, measuring about four by five feet, of the Union Depot of St. Louis, Mo.

Principal H. H. Girardy, of the Norton County High School, was a welcome visitor last Thursday. He was accompanied by a member of the school board. They were looking for a teacher of science.

Work has commenced on the new heating tunnel to the buildings at the north end of the campus. It is intended to line it with cement concrete in place of the brick which was used in all the old tunnels.

The College battalion was inspected by Capt. Julius A. Penn, General Staff, War College, Washington, D. C., last Tuesday afternoon. The captain, who was detailed by the United States War Department to make a number of inspections in the Western States, spoke in high praise of the work of the boys and their soldierly qualities. The afternoon was warm and the review and drill lasted from 3 to past 6 o'clock. It was the severest afternoon that the battalion has seen so far.

Last Saturday noon the sad news reached the "Hill" that Miss Elsie Kammeyer, daughter of Professor and Mrs. Kammeyer, of this College, had died in Park View hospital, of appendicitis. The funeral services were held Monday in the M. E. church and were largely attended by her College friends, the Faculty, and citizens. Bright, vivacious Elsie now sleeps her last sleep in the beautiful Manhattan cemetary. Miss Kammeyer was a member of the sophomore class in the domestic science course, an Ionian, a teacher in the M. E. Sunday-school, a member of the College Y. W. C. A., and the secretary of the Lecture Course Committee. She was born in Kansas City, Kan., August 10, 1890, and came to Manhattan with her parents in 1904. She was a favorite with all her student friends, a good student, and a dutiful daughter. Her bereaved parents and relatives have the deepest sympathy of the whole College.

Miss Clara Willis, assistant in the Domestic Science Department, has found time during the past two years to make up her work so that she can graduate with the class of '08. She is a graduate of Framingham Normal School, Framingham, Mass.

The Iowa Aggies on last Saturday came down to Kansas City and in the first conference track meet smothered the leading universities and other schools that pretend to be something in the Missouri Valley with a score that made them all rub their eyes and wonder who this Farmer bunch was. The Aggies all around us and including ourselves seem to be coming unto their own. Oklahoma made off with first place in the Southwest track meet, we did a similar stunt in Kansas, and now Iowa State takes the Missouri Valley schools down the line by more than doubling her score on the nearest competitor. Kansas State College hereby extends congratulations to Iowa State College and Oklahoma A. and M.—*Students' Herald.*

Alumni and Former Students.

W. O. Peterson, '97, is now to be addressed at Randolph instead of Gove, Kan.

Mary (Norton) Polson, '97, died at her home near Randolph, May 20, after a prolonged illness. The family have the sympathy of many friends.

J. A. Thompson, '03, is employed as a veterinarian in the Bureau of Agriculture of the Philippine Islands. His address is Iloilo, Panay, P. I.

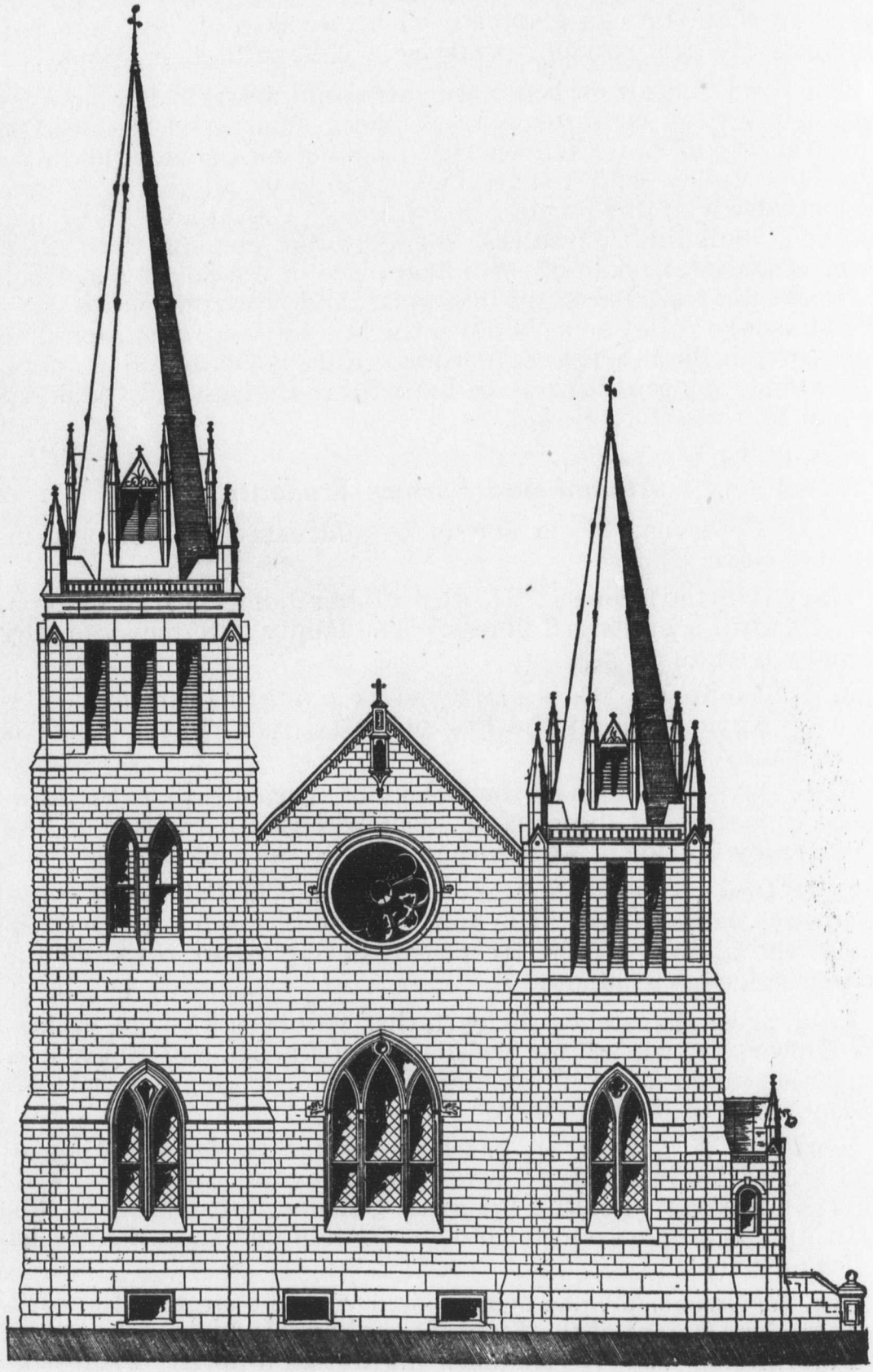
K. C. Davis, '91, dean of the School of Agriculture at St. Lawrence University, Canton, N. Y., has accepted a position in the New Jersey College of Agriculture, New Brunswick, N. J.

C. D. Pratt, '85, is secretary of the Lincoln Paint and Color Company, Dallas, Texas. He hopes to find it possible to be present at the alumni reunion this year, having never revisited the College since his graduation.

From press dispatches we learn that Teachers' College, Columbia University, will confer the degree of Bachelor of Science in Education upon Mary Josephine Edwards, '05, and Mamie M. Hassebroek, '04, June 10 next.

Henrietta W. Calvin, '86, has been elected professor of household economics in Purdue University, Lafayette, Ind. Mrs. Calvin's administration of the Domestic Science Department of this institution is ample assurance to her friends that she will succeed in her new field.

Geo. W. Owens, '99, has been elected to take charge of the agricultural department of the State Normal and Industrial Institute at Petersburg, Va. He assumes his duties June 1. Professor Owens has been at the Normal Institute of Tuskegee, Ala., for the nine years since his graduation and has made a very creditable record. We will expect even better reports in the future.



Front elevation of a Gothic church. Original work in architectural composition by Student H. B. Winter.

Commencement Week, 1908

Sunday, June 14

Baccalaureate Sermon, College Auditorium, 4 p. m., Rev. Robert E. L. Jarvis, D. D., Pastor Presbyterian Church, Winfield, Kansas.

Monday, June 15

Recital by Music Department, College Auditorium, 8 p. m.

Tuesday, June 16

Examinations from 8:35 a. m. to 2:40 p. m.

Senior Play to Invited Guests, College Auditorium, 8 p. m.

Wednesday, June 17

Examinations from 8:35 a. m. to 11:50 a. m.

Business Meeting Alumni Association, 2:00 p. m.

Class and Society Reunions, 3:30 to 6 p. m.

Triennial Alumni Address, College Auditorium, 8 p. m., Ernest F. Nichols, '88, Professor of Experimental Physics, Columbia University, New York.

Thursday, June 18

Annual Address, College Auditorium, 10 a. m., Dr. Albion W. Small, Dean of Graduate College, Professor of Sociology, University of Chicago.

Presentation of Diplomas

Cadet Band Concert, College Auditorium, 2 p. m.

Military Drill, 3 p. m.

Triennial Reunion of Alumni and Invited Guests, Young Men's Christian Association Building, Corner Fremont and 11th Streets, 7:30 p. m.

Board of Instruction (*concluded*).

JACOB LUND, M. S. (K. S. A. C.).....Superintendent Heat and Power Department
JOHN H. MILLER, A. M.....Superintendent Farmers' Institutes
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.).....Secretary
CLARENCE L. BARNES, D. V. M. (Cornell).....Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B. S. (Chicago).....Assistant Professor of Physics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.).....Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.).....Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard).....Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.).....Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.).....Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K. S. A. C.).....Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago).....Assistant Professor of Mathematics

---

Miss Ada Rice, B. S. (K. S. A. C.).....Instructor in English
Miss Ella Weeks, A. B. (U. of K.).....Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount).....Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University).....Instructor in Veterinary Science
Robert E. Eastman, M. S. (Cornell University).....Instructor in Horticulture
Miss Ula M. Dow, B. S. (K. S. A. C.).....Instructor in Domestic Science
Theo. H. Scheffer, A. M. (Cornell University).....Instructor in Zoölogy
Herbert H. King, M. A. (Ewing College).....Instructor in Chemistry
John B. Whelan, B. S. (Nebraska).....Instructor in Chemistry
William L. House.....Foreman of Carpenter Shop
Miss Gertrude Barnes.....Assistant Librarian
Louis Wabnitz.....Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.).....Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.).....Foreman of Foundry
Miss Emma J. Short.....Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.).....Assistant in Domestic Art
Miss Kate Tinkey.....Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C.).....Assistant in Printing
Roy A. Seaton, B. S. (K. S. A. C.).....Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College).....Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.).....Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale).....Assistant in Architecture and Drawing
Chas. Yost.....Assistant in Heat and Power Department
Earle B. Milliard.....Foreman of Blacksmithing
J. T. Parker,.....Assistant in Woodwork
J. D. Magee, A. M. (Chicago).....Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit).....Assistant in German
Miss Florence S. Latimer, B. M. (Ferry Hall Seminary).....Assistant in Music
Miss Marjorie Russell (Mechanics' Institute).....Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.).....Assistant in Botany
Burton Rogers, D. V. M. (Iowa State College).....Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal).....Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.).....Assistant Chemist, Experiment Station
Edw. C. Crowley, Ph. B. (Yale).....Assistant in Chemistry
Hugh Oliver.....Assistant in Heat and Power Department
Miss Charlaine Furley, B. A. (Fairmount).....Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (U. of K.).....Assistant in Preparatory Department
Leland E. Call, B. S. (Ohio State University).....Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University).....Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.).....Assistant in English
William C. Lane, B. S. (K. S. A. C.).....Assistant in Physics
Louis H. Beall, A. B. (Denison).....Assistant in English
Miss Flora C. Knight, A. B. (Uni. of Wyoming).....Assistant in English
Miss Grace H. Woodward (Boston School of D. S.).....Assistant in Domestic Science
Miss Nellie Cave, B. M. (Univ. of Nebr.), (Chicago Music Coll.).....Assistant in Music
Miss Anna I. McKirahan.....Assistant in Music
Miss Margaret Mack (K. S. N.).....Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.).....Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.).....Assistant in Botany
Charles E. Bassler, D. V. M. (K. S. A. C.).....Assistant in Veterinary Science
Miss Mary W. Hancock (Mechanics' Inst.).....Assistant in Domestic Art
S. W. McGarrah, A. M. (Grove City College).....Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.).....Assistant in Animal Husbandry
Arthur L. Peck, B. S. (Mass. Ag. Coll.).....Assistant in Horticulture
Kirk H. Logan, B. S. (U. of K.).....Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College).....Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University).....Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College).....Assistant in Preparatory Department
Loren Clark.....Assistant in Printing
Miss Bertha M. Johnston (Simmons College).....Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.).....Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University).....Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.).....Assistant in Agronomy
Earle Brintnall, B. S. (Iowa State College).....Assistant in Dairy Husbandry
J. B. Parker, M. A. (Ohio State University).....Assistant in Entomology
William Neill.....Dairy Herdsman
G. A. Porteous.....Herdsman
Wm. A. Lamb.....Poultryman
Floyd Howard.....Farm Foreman
William R. Lewis.....Custodian

Historical Society

THE INDUSTRIALIST

Vol. 34 **No. 35**

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

The Industrialist.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

TERMS AND VACATIONS.

FALL TERM, 1907, THIRTEEN WEEKS.

Thursday, Friday, and Saturday, November 28, 29, and 30.....Thanksgiving vacation
Thursday and Friday, December 19, 20.....Examination at close of term

WINTER TERM, 1908, TWELVE WEEKS.

Monday, January 6.....Examination for admission, at nine A. M.
Tuesday, January 7.....Winter term begins
Tuesday, January 7.....Short courses in agriculture and dairying begin
Saturday, February 1.....Annual intersociety oratorical contest
Saturday, February 15.....Mid-term examination
Thursday, March 19.....Annual concert
Thursday and Friday, March 26, 27.....Examination at close of term

SPRING TERM, 1908, ELEVEN WEEKS.

Monday, March 30.....Examination for admission, at nine A. M.
Tuesday, March 31.....Spring term begins
Saturday, May 9.....Mid-term examination
Tuesday, May 19.....Beginning of summer course in domestic science
Tuesday and Wednesday, June 16, 17.....Examination at close of year
June 14 to 18.....Exercises of Commencement week
Thursday, June 18, at ten A. M.....Commencement
June 19 to September 16.....Summer vacation

FALL TERM, 1908,

Wednesday, September 16.....Examination for admission, at nine A. M.
Thursday, September 17.....College year begins

BOARD OF REGENTS.

HON. A. M. STORY, President.....Manhattan
HON. J. O. TULLOSS ['99], Vice-President.....Sedan
HON. J. S. MCDOWELL.....Smith Center
HON. GEO. P. GRIFFITH.....Hays
HON. EDWIN TAYLOR.....Edwardsville
HON. W. E. BLACKBURN.....Anthony
PRES. E. R. NICHOLS, Secretary *ex-officio*.....Manhattan

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
CHARLES WM. BURKETT, M. SC. (Ohio State University).....Director Experiment Station
JOHN D. WALTERS, M. S. (K. S. A. C.).....Professor of Architecture and Drawing
JULIUS T. WILLARD, M. S. (K. S. A. C.)....Professor of Chemistry, Vice-Director Exp. Station
BENJ. L. REMICK, Ph. M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B. S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A. B. (U. of K.), M. S. (K. S. A. C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph. M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S. B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M. S. (K. S. A. C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph. D. (Univ. of City of New York)....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B. S. (K. S. A. C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College).....Professor of Economics
JOHN V. CORTELYOU, A.M. (Uni. of Neb.), Ph. D. (Heidelberg).....Professor of German
OLOF VALLEY, B. M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D. V. S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B. S. A. (Iowa State College).....Professor of Animal Husbandry
WALTER E. KING, M. S. (Cornell).....Professor of Bacteriology
THOMAS J. HEADLEE, Ph. D. (Cornell).....Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U. S. A.....Professor of Military Science
JOHN C. KENDALL, B. S. (N. H. A. & M.).....Professor of Dairy Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art
MISS ANNE M. BOYD, A. B., Lib. Sci. (Millikin).....Librarian
ROBERT J. BARNETT, B. S. (K. S. A. C.).....Principal Preparatory Department

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., JUNE 6, 1908. No. 35

The Hessian Fly.

The Hessian flies winter in most cases as small brown seed-like objects, lying just inside the leaf-sheath, mostly underneath the surface of the ground where the roots come off. They are sometimes so tightly packed in this situation that the adjacent parts are flattened where they are pressed together. It is usually the central stalk that is worst infested, while the tillers, many of which grew up after the flies had deposited their eggs, may be almost, or, in most cases, quite free. With the coming of warm weather in the early spring, the gnat-like flies crawl out of the flaxseeds and fly about, laying their long-oval eggs lengthwise in the grooves upon the upper surface of the leaves. These eggs are just large enough to be seen with the unaided eye, and soon give forth the minute reddish larvæ that wriggle down inside the leaf-sheath to feed and fatten on the juice of the growing plant, thus so weakening the stalk that it will break and fall before harvest. As they grow the maggots lose their reddish color and become pure white. Most of them reach maturity and turn to brown seed-like flaxseeds before harvest. They work so low down in the wheat stalk that the harvester cuts the wheat off above them, leaving them undisturbed in the stubble. Here they remain until September or October, coming out later or earlier in the season as the weather is dry or moist.

The flies coming from the stubble lay their eggs on the early sown or volunteer wheat, the maggots hatching therefrom wriggle down inside the leaf-sheath to feed and, becoming full grown, transform to flaxseeds before cold weather comes on. While this is the case with most of the larvæ produced in the fall, some of the eggs are laid so late that the resulting maggots are unable to reach maturity before time for cold weather and perish or survive as the temperature falls low or remains high.

The larvæ by rasping and feeding take the food which naturally belongs to the plants and cause them to stop growing or even to die.

In late fall the presence of the fly is indicated by the form of

the plant. The stalk infested by maggots has no strong central shoot, but appears leafy and bushy. The first effect of the fly is to make the wheat tiller freely, covering the ground and giving the field a deep green color, thereby deceiving the inexperienced into thinking the prospect for wheat to be unusually fine. Later, if enough flies be present, the deep green will be exchanged for a yellow, sickly appearance, and it is then evident to every one that something is wrong.

Certain tiny, wasp-like insects prey on the Hessian fly, and when they are present in large numbers, the fly disappears as an injurious insect. Not enough study has been given to these parasites to enable any one to say under just what conditions they thrive and do their work.

At the present time there are no efficient remedial measures known. Once the fly is in your wheat nothing can be done to destroy it or even to save the crop, except to apply broadcast some quick-acting fertilizer, containing a large per cent of phosphate, in the hope of enabling the crop to mature in spite of the fly. All practical measures must be of a preventive nature, looking toward the elimination of the insect from the young wheat in the fall, and to increasing the vigor of the plants. Under the first head comes the destruction of the fly in the stubble, the destruction of volunteer wheat, and late sowing preceded by a trap crop. The flaxseeds infesting the stubble from harvest to fall can easily and certainly be destroyed by burning it off, or by disking immediately after harvest and then plowing it under so deeply in from two to four weeks that neither stubble nor volunteer wheat will remain sticking above the ground to form passageway for the flies when they emerge from the flaxseeds.

All volunteer wheat should be plowed under deeply before the regular crop is sown so that the fly infesting it will be destroyed and not left to attack the main crop. Where the succeeding field of wheat is sown some distance from that of the previous year, fewer of the flies can reach the wheat to deposit eggs. Inasmuch as it has been found that the flies can wait for some time in order to secure a desirable place in which to deposit their eggs, it is often desirable and worth while to sow early a strip of wheat about or across the prospective wheat field and, before the main crop is sown, to plow this fly-infested wheat under deeply, thus not only inducing the flies to lay their eggs, but destroying their progeny. By far the most important measure is to be found in the practice of sowing wheat only after the bulk of the flies have deposited their eggs. This time, however, varies with the nature of the

season from year to year, and can be determined only by experiment. Experimental sowings during the past year have shown that wheat sown in southern Kansas after October 15 has been almost entirely free, while that sown after the first week in October in central Kansas and in late September and early October in northern Kansas has been found free from infestation.

It is obvious that any method which makes a healthier, stronger plant will mature a better crop in spite of the fly than would be possible where plants equally infested are neglected. Therefore, the choice of good seed, enriching of the soil, and careful preparation of the seed-bed are exceedingly important measures in preventing the damage due to Hessian fly. T. J. HEADLEE.

Dairying at the Kansas State Agricultural College.

No other line of farming interest has attracted so much attention in recent years as dairying. As land values increase different methods of farming must be employed than those practiced on cheap land. If dairymen in Holland can, on $1000 land, buy American feed and then ship butter to America and still make money, certainly Kansas farmers ought to prosper on $50 and $100 land when they can raise corn, clover and alfalfa, the best dairy feeds in the world, and sell on a good home market.

The Dairy Department of the Agricultural College is working on some very practical lines. Professor Kendall has started a "model dairy farm" on forty-two acres of land and will work out two experiments, one to balance the other, to determine the cheapest method of feeding dairy cows, and to see how many cows may be maintained on that much land.

The experiment proper will begin with July. The dairy herd has been reduced somewhat, and Professor Kendall wishes to build up the herd largely with Guernsey and Ayrshire breeds, as he deems them hardy and adapted to Kansas conditions and also excellent dairy breeds.

The entire forty-two acres had been in blue-grass; 18.1 acres have been plowed, and these plots will be used as follows:

Plot I, 6.6 acres, for corn silage.
Plot II, 3.5 acres, for corn for soiling (feeding as cut.)
Plot III, 3 acres, for cow-peas for hay.
Plot IV, 5 acres, for later corn silage.

From 11.6 acres he expects to have enough silage to fill two 80-ton silos. As he cuts the corn from plot II he will sow part to Kafir, for later soiling, and part to cow-peas, sowing all of this plot to alfalfa in early September. A part of plot I or IV will also be sowed to alfalfa, and next year five acres will be taken from the

twenty-four acres of pasture and put in corn for silage. The idea is to limit the pasture area and add to the acreage for soiling, ensilage, and alfalfa. We think the farmers of Kansas will be surprised at some of the results to be obtained from this experiment.

It has been necessary this year to buy twenty-four acres of alfalfa from near-by farmers, and this is being cut and put in sheds. A new alfalfa shed is to be built for the later cuttings. It will be 24x60 feet, with a 12-foot driveway. Several experiments will be conducted in the shedding—cost of unloading and mowing by hand, pitching from sides and from driveway, swing fork, and with track from end of shed; also test as to keeping quality of hay put in the mow green, from cocks with and without caps. Old railroad ties will be laid on ground across the shed, and long poles lengthwise of shed across the ties.

A lean-to roof will be attached to south side of hay shed, and the cows will eat from shed under this shelter in early fall, through movable racks, gradually eating into the mow, the ties and poles being removed as necessary for the whole length of shed, thus keeping a north protection for the whole winter. The shed will be sided on the north.

An interesting test is now being made with different kinds of milk buckets. With the Gurler bucket, which has a small top with two metal strainers, with absorbent cotton between, milk is kept for twelve hours at the same degree of acidity, right out on open shelves away from the ice, but in covered bottles, showing that the usual rapid souring of milk is largely due to dirt in the milk. The milk was of course strained from the buckets through the regular dairy strainer, consisting of two metal strainers and a layer of cloth.

Tests are also being made by patrons of the creamery in different methods of handling their cream, cooling, etc. All cream is bought by the College creamery on a grading system, a certain price for first grade, two cents less for second grade, and six cents less for third grade. It is being proved to the patrons that it takes but little trouble to get all first grade, and that they get a big price for their labor in this difference. Cream is bought regularly from patrons within twenty miles of Manhattan, and any farmer in Kansas may ship occasional cans or all his cream for a short time to the creamery for testing or to learn the advantages of the grading system. His cream is carefully and accurately tested, and he is paid according to the test, but on the basis of New York prices. No quotations are made, however, in advance. The

farmer will get a statement of test, and if he desires it suggestions for improvement of his product will be made.

For the purpose of helping the actual butter makers of the State, Professor Kendall has inaugurated a butter making contest. Each butter maker ships here a tub of butter, all butter is scored carefully, and the one having the best score receives a certificate. At the end of the year the butter maker having the highest average score will receive a beautiful silver cup from the State Dairy Association. All butter is sold and the proceeds remitted to the butter makers.

These are only a few of the many experiments now being conducted by the Dairy Department of the Kansas State Agricultural College for the advancement of dairying in Kansas. It will be impossible to do the highest type of work, however, either in experimental or instructional lines, with the present small dairy building and the poorly planned dairy barn.

The Chinch-Bug.

(Press Bulletin No. 161.)

"Few insects, and certainly no other species of the natural order to which this one belongs, have caused such enormous pecuniary losses as the chinch-bug. No other insect native to the Western Hemisphere has spread its devastating hordes over a wider area of country with more fatal effects to the staple grains of North America than has this one. But for the extreme susceptibility of the very young to destruction by drenching rains and to the less though not insignificant destructiveness during rainy seasons of" parasitic fungi "on both adults and young, the practice of raising grain year after year in the same areas, as followed in the United States, would become altogether unprofitable."* During the last forty years it is probable that the chinch-bug has effected more damage to staple crops in Kansas than can be charged to any other one insect.

This insect passes the winter as an adult bug in bunches of native grasses, under leaves in woodlands and hedgerows, under the leaf sheaths of corn-stalks, and under or in rubbish generally wherever it can find shelter. With the coming of favorable spring weather the chinch-bug emerges from winter quarters and flies away over wheat, barley and rye fields and grass lands. Here it settles to the ground and thrusting its beak into the growing plants feeds upon the flowing sap (after its long winter fast). Soon the female begins to deposit eggs upon the soil, in cracks and crev-

*Bul. No. 69, U. S. Dept. Agric., Bureau of Entomology.

ices of the soil, and upon the bases and roots of the plants. It is said that a female may lay 500 eggs in a period of from ten days to two weeks. The eggs are oval, about $\frac{3}{100}$ of an inch long, pure white when laid, but changing to reddish as the hatching time approaches. In about two weeks from the date of laying, the eggs hatch and the orange-yellow young crawl actively about, soon thrusting their tiny beaks into the tender parts of the plants, and feeding on the sap. Soon after the eggs begin hatching, adults, white eggs, reddish eggs, and orange-yellow young may be found together in infested fields. On the failure of food through ripening of the grain, the bugs of all ages set out on foot to find succulent plants suited to their taste, generally moving toward the adjacent corn fields. In the corn field they lay eggs for the generation that, reaching maturity before cold weather, passes the winter as already described. The chinch-bug requires, under normal out-door conditions, from 57 to 60 days to pass from freshly laid eggs to adults and produces two generations each year.

Owing to favorable or unfavorable weather conditions and to the absence or presence of natural enemies, the chinch-bug is sometimes present in devastating hordes and sometimes so rare as to do no appreciable damage. The period of abundant chinch-bugs is always followed by a time when they are comparatively rare, and that in its turn by another period of abundance.

Last fall the great abundance of bugs and the serious nature of the damage reported indicated that a period of chinch-bug trouble was at hand, and the reported injury to wheat and barley this spring has only served to strengthen the impression. The heavy rains occurring just at the hatching time have, however, destroyed many of the young, and if continued throughout the hatching period may do much to prevent later trouble. Parasitic fungi, thriving as they are under the unusual moisture and attacking both adults and young, are working toward the same end. Last fall not less than 25 counties lying mainly within the eastern part of the wheat belt reported chinch-bug in serious numbers, and this spring at least twelve have reported the chinch-bugs injuring the wheat. It is, therefore, probable that, unless the damp, rainy weather continues throughout the hatching season and parasitic fungi take hold generally, the young bugs will, with the hardening of infested wheat and other grains, march into adjoining corn fields and do great harm. Unfortunately, the present knowledge of chinch-bug warfare shows there is no practicable method of destroying the bugs in the wheat save as nature herself, through the

agency of dashing rains, destroys the hatching young and encourages the growth of parasitic fungi on young and old.

There is, then, danger that in many localities the chinch-bugs will march from ripening wheat into near-by corn fields, and the question is how to prevent this disaster. Fortunately, many experiments have been performed along this line and an abundance of data made available.

When the bugs set out in search of food the farmer can prevent them from passing into his growing corn or other grain by erecting and maintaining barriers between the field from which they come and the field toward which they are going. In general, there are two types of barriers—one, the dust line, especially useful in dry weather, and the other the petroleum or tar line, especially fitted for wet weather. The best type of dust barrier may be constructed as follows: Plow a strip 6 to 10 feet wide between the infested field and the field to be protected; thoroughly and deeply pulverize the strip with a disk harrow; then reduce the surface to dust by dragging a brush or other instrument over it; drag a short log eight or ten inches in diameter, or a triangular trough, made by nailing two boards together and loading with stone, lengthwise along the dusty strip as near as practicable to the infested side until a deep furrow has been made; dress up the sides with a hoe so that no passageways may be left; dig post-holes at least twelve inches deep in the bottom of this furrow at intervals of twenty feet. The bugs will collect in these holes, where they may be destroyed by pouring kerosene upon them. After a time the slope of the furrow-wall will be lessened by the dragging down of the dust particles under the many persistent feet, and a new furrow should be constructed in the same way, parallel to the old. This procedure should be continued as long as the bugs keep coming.

This dust barrier will work perfectly so long as the ground can be kept thoroughly dusty, but its usefulness is destroyed by even a slight rain, which hardens the surface and allows the chinch-bugs to pass over without difficulty.

The petroleum or coal-tar barrier may be constructed as follows: Prepare a hard, smooth surface in any one of three ways— (1) by dragging a heavily loaded plank over a strip between the infested field and the one to be protected; (2) by plowing a back furrow and shaping it into a smooth-walled ridge with a furrow along its summit by running over it an inverted convex-bottomed trough of proper size; (3) by plowing a furrow and cleaning out the soft dirt; pour along the smooth surface so constructed a line of coal

tar or crude petroleum about three-fourths of an inch wide, and keep this fresh so that the bugs can find no place to cross; dig post-holes at intervals of twenty feet along the infested side of the line. The bugs will not cross the line, but will collect in the holes, where they may be destroyed by pouring kerosene oil upon them. A man or boy can guard 80 to 100 rods of such a barrier, but he must be in the field early and late.

In regions where irrigation is possible, land sufficiently level, and soil of such a character that the water will remain in the ditches, an efficient barrier may be made by plowing a furrow between the infested field and the one to be protected, and keeping it filled with water over which a surface film of kerosene oil has been spread.

It is not enough to know that these barriers are effective and how they are made. The farmers must know also when they should be constructed. This he can know with certainty only by careful observation of the chinch-bugs. If the wheat be free from grass and weeds, the bugs are likely to leave as soon as it hardens, but if it be full of grass and weeds, their going may be long delayed. If he finds the bugs very abundant, all preparations necessary to the construction of barriers should be completed. Then by keeping a careful watch he can tell when the insects are beginning to move and should lose no time in preparing the barriers. From this time forward he must attend to the barriers until the bugs cease to come. Should they get into the first few rows before they are noticed, the petroleum or tar-line barrier should be run between the infested and non-infested parts of the corn field and their further passage vigorously disputed.

By careful attention and the expenditure of a reasonable amount of time and labor in view of the object to be gained, the enterprising farmer can prevent the damage which would otherwise be felt in his decreased corn crop. Let those whose corn fields lie adjacent to bug-infested wheat fields be on their guard.

The chinch-bug may be attacked to advantage in its winter quarters, but that phase of the question will be treated at another time.

T. J. HEADLEE.

On account of the frequent and heavy rains it has been difficult to plant corn and get a good stand. By replanting by hand the Agronomy Department has now secured a fair stand of corn in all the breeding fields, and the favorable weather for growth promises a good crop. We hope to have several hundred bushels of good seed-corn for sale next spring.

The Charles Silley Bequest.

Mr. F. L. Williams, of Williamsburg, has filed in the district court a report, covering about twenty-five typewritten pages, of his trusteeship of a fund for boys attending the Kansas State Agricultural College at Manhattan.

About nine years ago Charles Silley, of near Williamsburg, conceived the plan of helping men through the Manhattan College by loaning them money at five per cent. Mr. Silley made Mr. Williams trustee of his property, consisting of 240 acres of land and about $500 in money. Mr. Silley died four years ago. The report just filed by Mr. Williams is summarized as follows:

RECEIPTS.

Interest and other cash items	$ 509.56
Insurance	407.50
Returned by the K. S. A. C. boys	1521.59
Received from the farms	3211.45
Total	$ 5650.10

DISBURSEMENTS.

New buildings, paint, repair, fences, labor, two houses, one barn	$ 1464.77
Wells, ponds, grass seed	183.57
Postage, printing, railway fare and attorney	135.40
Insurance	51.83
County tax on land	431.74
Trustee's account	635.03
Paid to 64 different K. S. A. C. boys	2433.89
Balance on hand	313.87
Total	$ 5650.10

The fourth number of the Farmers' Institute Series of the INDUSTRIALIST, "Sheep," is now being mailed to members of farmers' institutes by the Extension Department. This is a very valuable pamphlet of forty-six pages, written by Prof. R. J. Kinzer, of the Animal Husbandry Department of the Agricultural College, and ought to be of great value in the advancement of the sheep industry.

The College battalion, consisting of four companies of cadets and the band, took part in the Manhattan Memorial exercises on Decoration Day. They, together with the Manhattan N. G., the two companies of the local G. A. R., and a large procession of citizens in vehicles, formed near the court-house, marched to the cemetery and decorated the graves of the dead defenders of the stars and stripes. The procession was the best ever seen in the city and our boys, in their handsome uniforms and headed by their band, presented a soldierly appearance that was commented upon by everyone. The band played better than ever before.

Local Notes.

The annual Senior-Faculty game will be played Wednesday afternoon, June 10.

The continued wet weather has greatly interfered with the spraying operations of the Horticultural Department.

President Roosevelt has signed the bill adding $20,000 to the appropriation for a new post-office building at Manhattan. The total appropriated is now $70,000.

Mr. J. S. Jones, senior in the agricultural course, has been elected to a position in the Norton County High School. He will teach the sciences, including agriculture, and manual training.

Prof. R. J. Kinzer was at Hays Branch Experiment Station over Sunday to look after his experimental work carried on out there. He reports plenty of rain in that part of the State and all the crops in fine condition.

This week the Agronomy Department sent a shipment of samples of various grains to the Government Experiment Station of Peru, South America. The grain will arrive there in season to be planted as a spring crop.

Dr. E. W. Allen, assistant director office of experiment stations, arrived here Friday on a tour of inspection of experiment stations. He will stay several days and look into the work of the departments connected with the Station.

Assistant Ella Weeks, of the Department of Architecture and Drawing, is having a pamphlet printed in the College printing-office on the subject of color teaching. The booklet will be used next year by her classes in color and design.

Prof. W. L. Carlyle, of the Colorado State Agricultural College, was here this week investigating the Experiment Station with the view of becoming a candidate for the position of director when Dr. C. W. Burkett leaves for his new field of work in September.

Winter barley on the Experiment Station grounds will be harvested next week. This is the earliest maturing grain in our fields, maturing several days earlier than winter rye and usually producing a large yield—on the average nearly double that of spring barley.

Friends of the College who know of young people who may be interested in attending College next year are requested to send names of such people to Superintendent Agricultural College Extension, Room 32, Anderson Hall, giving names, address, and the department in which they are probably interested.

Our track team at Stillwater lost to the Oklahoma Agricultural and Mechanical College team by a 49 to 63 score. Seng got first in hammer throw and shot put and missed getting first in discus by one-tenth of a foot. Ross took pole vault and McNall the two-mile run. The last event, mile relay, was prevented by rain and hail. This was a sure point for us, and would have made the score 54 to 63.

The garden and strawberry bed still suffer from the depredations of the petty thief. It may seem a small matter to the offender, but it means a great deal to the department in charge when an experiment, which has cost many dollars and much time, is wasted because of the lawlessness of such persons.

The Riley County Normal Institute opened last Monday with an enrolment of sixty-six—sixty-five women and one man. While the attendance is not up to former records, it is very satisfactory. An able corps of instructors has been secured and are working earnestly. They are Supt. Nathan T. Veatch, of the Wichita schools, Prof. E. F. Stanley, principal of one of the Topeka schools, Miss Jennie Broughton, principal of the Randolph schools, and County Superintendent Wetzig.

Rev. William A. Quayle, of Chicago, who was last week elected bishop of the M. E. church, was in the '80s a sophomore student in this College, and we ascribe his practical and common-sense way of conducting church affairs and theology to the early training he received here. The local editor well remembers the bright, red-headed soph. who never could sit still for more than a minute and who hardly ever had his lesson, though he somehow always passed the finals with good grades. When we met him out in Colorado a year ago he, too, remembered these facts, and said he hoped we would forgive him. It is all right, now, Brother Quayle —Bishop, we meant to say.

The first cutting of alfalfa is practically harvested, much of the hay being damaged by the rain. The Agronomy Department is carrying on an experiment this season in putting up green alfalfa and curing it in a shed. The alfalfa is cut in the forenoon and put in the shed in the afternoon. The mower starts in the morning, as soon as the dew is off, the rake starts at about 11 A. M., and the haywagon begins loading immediately after the dinner hour. The shed is 48x24 feet and has a raised floor, giving free circulation of air beneath the hay. About ten acres of alfalfa are cut and the hay spread over the bottom of the shed to the depth of three or four feet. The second cutting is spread over the first, and so on. This is a new method of putting up alfalfa. Farmers will do well to watch for the results.

One of the most interesting literary events of the year was the democratic mock convention given jointly by the Hamiltons and Websters Friday night. The Auditorium was decorated with banners and emblems, even the Tammany tiger was present. In a corner of the stage were the press reporters, with their telegraph instruments. The proceedings of the convention were conducted in much the same manner that real conventions are. W. T. McCall, representing John Sharp Williams, was chosen chairman of the convention. Great laughter was stirred up when the Oklahoma contesting delegations got into a fight, in which two policemen took a hand, and freely swatted the heads of the disturbers. Bryan was nominated by Raymond Brink, a senior student. Fred Hayes, a veterinary student, nominated Johnson, of Minnesota. F. S. Taft, a senior, nominated Gray, of Delaware.

Asbury Endacott, a sophomore, who was one of the boys who impersonated women on the Colorado delegation, nominated Carrie Nation. There were the usual disputes over split delegations and the adoption of the platform. The balloting resulted in the nomination of William Jennings Bryan.

Our athletic team will have some heavy work to do during the closing days of the term. Professor Cortelyou, manager of the team, hands us the following schedule of dates: State University, June 6 at Manhattan and June 8 at Lawrence. Haskell Institute, June 9 at Lawrence, and June 11 and 12 at Manhattan. In addition to these games there will be the individual track and field meet on June 8 and the game between the alumni and the first team at 4 o'clock on Commencement Day.

Pres. and Mrs. E. R. Nichols extended their hospitality Tuesday evening from 8 to 11 o'clock to the senior class. This is an annual affair, very much enjoyed. Over a hundred invitations were sent out. The parlors of the beautiful home were attractively decorated with red and white carnations and roses in the west room, while marguerites and blue corn flowers beautified the east room. The spacious verandas were converted into cosy corners, with numerous rugs and easy chairs. The host and hostess were assisted in entertaining by Prof. and Mrs. J. O. Hamilton, Prof. and Mrs. R. H. Brown, Prof. and Mrs. G. F. Freeman. In the dining-room Miss Mabel Thompson presided at the punch bowl during the evening. The table had a lovely centerpiece of blue ageratum and white phlox, the senior class colors. An interesting program was thoroughly enjoyed. Mrs. Freeman sang "Nightengale," and responded to an encore with "Four Leaf Clover." Prof. Brown gave violin solos, with piano accompaniment by Mrs. Brown; Edna Jones, piano solos; Miss Grace Smith, a pretty vocal solo; and Miss Nellie Lincoln gave a recital. The program closed with Miss Hallie Smith at the piano and class singing "Alma Mater" and other College songs.—*Nationalist.*

Alumni and Former Students.

Reports are coming in indicating that there will be a good attendance of alumni at the reunion Commencement week. Now is the time to make up your mind to come.

H. McCaslin, '01, took advantage of a trip to the eastern part of the State on legal business to stop off at the College. He is located at Atwood, Kan., but his law practice takes a considerably wider range. He seems possessed of all his old-time sand and enthusiasm, and hopes to be present at the alumni reunion.

Julia Spohr, '06, was married at 12 o'clock Wednesday, June 4, to Mr. Vernon Heath, of Peabody, Kan. The wedding took place in Emporia, at the residence of Miss Spohr's sister, Mrs. Emma (Spohr) Huggins, in the presence of a limited number of friends and relatives. Mr. and Mrs. Heath went at once to their home in Peabody.

Commencement Week, 1908

Sunday, June 14

Baccalaureate Sermon, College Auditorium, 4 p. m., Rev. Robert E. L. Jarvis, D. D., Pastor Presbyterian Church, Winfield, Kansas.

Monday, June 15

Recital by Music Department, College Auditorium, 8 p. m.

Tuesday, June 16

Examinations from 8:35 a. m. to 2:40 p. m.

Senior Play to Invited Guests, College Auditorium, 8 p. m.

Wednesday, June 17

Examinations from 8:35 a. m. to 11:50 a. m.

Business Meeting Alumni Association, 2:00 p. m.

Class and Society Reunions, 3:30 to 6 p. m.

Triennial Alumni Address, College Auditorium, 8 p. m., Ernest F. Nichols, '88, Professor of Experimental Physics, Columbia University, New York.

Thursday, June 18

Annual Address, College Auditorium, 10 a. m., Dr. Albion W. Small, Dean of Graduate College, Professor of Sociology, University of Chicago.

Presentation of Diplomas

Cadet Band Concert, College Auditorium, 2 p. m.

Military Drill, 3 p. m.

Triennial Reunion of Alumni and Invited Guests, Young Men's Christian Association Building, Corner Fremont and 11th Streets, 7:30 p. m.

Board of Instruction (concluded).

JACOB LUND, M. S. (K. S. A. C.) ..... Superintendent Heat and Power Department
JOHN H. MILLER, A. M. ..... Superintendent Farmers' Institutes
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.) ..... Secretary
CLARENCE L. BARNES, D. V. M. (Cornell) ..... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B. S. (Chicago) ..... Assistant Professor of Physics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.) ..... Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard) ..... Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.) ..... Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.) ..... Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K. S. A. C.) ..... Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago) ..... Assistant Professor of Mathematics

---

Miss Ada Rice, B. S. (K. S. A. C.) ..... Instructor in English
Miss Ella Weeks, A. B. (U. of K.) ..... Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount) ..... Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University) ..... Instructor in Veterinary Science
Robert E. Eastman, M. S. (Cornell University) ..... Instructor in Horticulture
Miss Ula M. Dow, B. S. (K. S. A. C.) ..... Instructor in Domestic Science
Theo. H. Scheffer, A. M. (Cornell University) ..... Instructor in Zoölogy
Herbert H. King, M. A. (Ewing College) ..... Instructor in Chemistry
John B. Whelan, B. S. (Nebraska) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Miss Gertrude Barnes ..... Assistant Librarian
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.) ..... Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.) ..... Foreman of Foundry
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C.) ..... Assistant in Printing
Roy A. Seaton, B. S. (K. S. A. C.) ..... Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College) ..... Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale) ..... Assistant in Architecture and Drawing
Chas. Yost ..... Assistant in Heat and Power Department
Earle B. Milliard ..... Foreman of Blacksmithing
J. T. Parker, ... Assistant in Woodwork
J. D. Magee, A. M. (Chicago) ..... Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit) ..... Assistant in German
Miss Florence S. Latimer, B. M. (Ferry Hall Seminary) ..... Assistant in Music
Miss Marjorie Russell (Mechanics' Institute) ..... Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.) ..... Assistant in Botany
Burton Rogers, D. V. M. (Iowa State College) ..... Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal) ..... Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.) ..... Assistant Chemist, Experiment Station
Edw. C. Crowley, Ph. B. (Yale) ..... Assistant in Chemistry
Hugh Oliver ..... Assistant in Heat and Power Department
Miss Charlaine Furley, B. A. (Fairmount) ..... Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (U. of K.) ..... Assistant in Preparatory Department
Leland E. Call, B. S. (Ohio State University) ..... Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University) ..... Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.) ..... Assistant in English
William C. Lane, B. S. (K. S. A. C.) ..... Assistant in Physics
Louis H. Beall, A. B. (Denison) ..... Assistant in English
Miss Flora C. Knight, A. B. (Uni. of Wyoming) ..... Assistant in English
Miss Grace H. Woodward (Boston School of D. S.) ..... Assistant in Domestic Science
Miss Nellie Cave, B. M. (Univ. of Nebr.), (Chicago Music Coll.) ..... Assistant in Music
Miss Anna I. McKirahan ..... Assistant in Music
Miss Margaret Mack (K. S. N.) ..... Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.) ..... Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.) ..... Assistant in Botany
Charles E. Bassler, D. V. M. (K. S. A. C.) ..... Assistant in Veterinary Science
Miss Mary W. Hancock (Mechanics' Inst.) ..... Assistant in Domestic Art
S. W. McGarrah, A. M. (Grove City College) ..... Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.) ..... Assistant in Animal Husbandry
Arthur L. Peck, B. S. (Mass. Ag. Coll.) ..... Assistant in Horticulture
Kirk H. Logan, B. S. (U. of K.) ..... Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College) ..... Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University) ..... Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College) ..... Assistant in Preparatory Department
Loren Clark ..... Assistant in Printing
Miss Bertha M. Johnston (Simmons College) ..... Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.) ..... Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University) ..... Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.) ..... Assistant in Agronomy
Earle Brintnall, B. S. (Iowa State College) ..... Assistant in Dairy Husbandry
J. B. Parker, M. A. (Ohio State University) ..... Assistant in Entomology
William Neill ..... Dairy Herdsman
G. A. Porteous ..... Herdsman
Wm. A. Lamb ..... Poultryman
Floyd Howard ..... Farm Foreman
William R. Lewis ..... Custodian

RETROSPECT.

Historical Society

THE INDUSTRIALIST

Vol. 34 No. 36

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

The Industrialist.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

TERMS AND VACATIONS.

FALL TERM, 1907, THIRTEEN WEEKS.

Thursday, Friday, and Saturday, November 28, 29, and 30.....Thanksgiving vacation
Thursday and Friday, December 19, 20.....Examination at close of term

WINTER TERM, 1908, TWELVE WEEKS.

Monday, January 6.....Examination for admission, at nine A. M.
Tuesday, January 7.....Winter term begins
Tuesday, January 7.....Short courses in agriculture and dairying begin
Saturday, February 1.....Annual intersociety oratorical contest
Saturday, February 15.....Mid-term examination
Thursday, March 19.....Annual concert
Thursday and Friday, March 26, 27.....Examination at close of term

SPRING TERM, 1908, ELEVEN WEEKS.

Monday, March 30.....Examination for admission, at nine A. M.
Tuesday, March 31.....Spring term begins
Saturday, May 9.....Mid-term examination
Tuesday, May 19.....Beginning of summer course in domestic science
Tuesday and Wednesday, June 16, 17.....Examination at close of year
June 14 to 18.....Exercises of Commencement week
Thursday, June 18, at ten A. M.....Commencement
June 19 to September 16.....Summer vacation

FALL TERM, 1908,

Wednesday, September 16.....Examination for admission, at nine A. M.
Thursday, September 17.....College year begins

BOARD OF REGENTS.

HON. A. M. STORY, President.....Manhattan
HON. J. O. TULLOSS ['99], Vice-President.....Sedan
HON. J. S. MCDOWELL.....Smith Center
HON. GEO. P. GRIFFITH.....Hays
HON. EDWIN TAYLOR.....Edwardsville
HON. W. E. BLACKBURN.....Anthony
PRES. E. R. NICHOLS, Secretary *ex-officio*.....Manhattan

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
CHARLES WM. BURKETT, M. Sc. (Ohio State University).....Director Experiment Station
JOHN D. WALTERS, M. S. (K. S. A. C.).....Professor of Architecture and Drawing
JULIUS T. WILLARD, M. S. (K. S. A. C.).....Professor of Chemistry, Vice-Director Exp. Station
BENJ. L. REMICK, Ph. M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B. S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A. B. (U. of K.), M. S. (K. S. A. C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph. M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S. B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M. S. (K. S. A. C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph. D. (Univ. of City of New York).....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B. S. (K. S. A. C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College).....Professor of Economics
JOHN V. CORTELYOU, A.M. (Uni. of Neb.), Ph. D. (Heidelberg).....Professor of German
OLOF VALLEY, B. M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D. V. S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B. S. A. (Iowa State College).....Professor of Animal Husbandry
WALTER E. KING, M. S. (Cornell).....Professor of Bacteriology
THOMAS J. HEADLEE, Ph. D. (Cornell).....Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U. S. A.....Professor of Military Science
JOHN C. KENDALL, B. S. (N. H. A. & M.).....Professor of Dairy Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art
MISS ANNE M. BOYD, A. B., Lib. Sci. (Millikin).....Librarian
ROBERT J. BARNETT, B. S. (K. S. A. C.).....Principal Preparatory Department

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., JUNE 13, 1908. No. 36

Retrospect.

The year now drawing to a close has been in many respects the most prosperous in the history of the Kansas State Agricultural College. It has been a year of intense growth, a year of good cheer, good feeling, and effective coöperation of the Faculty and the students. It has witnessed the organization of several new courses of study, and the strengthening of all the old courses; it has seen the erection and completion of the new Domestic Science and Art Hall and the Veterinary Science Hall, the building of the new greenhouse, the starting of the new Engineering Hall, and the addition of other means almost too numerous to mention. With its 2200 students, the Kansas State Agricultural College is to-day the best attended and largest of all the land-grant institutions in America, and the INDUSTRIALIST should be forgiven if at the end of such a year it feels like telling its patrons how it all came about.

ATTENDANCE.

The forthcoming catalogue will contain the names of 2192 students. To this number should be added many of the students of the summer course in domestic science. This course begins on May 19, at a time when the copy for the annual catalogue is in the hands of the State printer. The addition of but twelve names will push the number across the 2200 mark, which is far above that of any institution west of the Mississippi river. The records for the past ten years are as follows:

1898-'99	870
1899-'00	1094
1900-'01	1321
1901-'02	1396
1902-'03	1574
1903-'04	1605
1904-'05	1462
1905-'06	1690
1906-'07	1937
1907-'08	2192

It will be seen that there has been a constant increase. The only year in the ten showing a reduction is 1904, and this was due

to a considerable increase in the entrance requirements, and the incidental fee of $3 per term (required by an act of the legislature of 1903.)

The figures show, too, that the present year witnessed the greatest increase (255 students) in the last ten years, and in fact in the history of the College. The total increase for the last three years was 730. Should the College grow like this in the future it would give us 2922 students in 1911, 3652 students in 1914, and 4382 students in 1917. We have not applied the geometric ratio in obtaining these numbers, but simply added 730 students for every three years. There will probably not be that many students here in nine years, or in a decade, but who will predict that the number will not be above the 3000 mark? Why should the great technical school of Kansas stop growing when the whole State—its population and its wealth—is growing at such a rate. There are over 7000 school districts in Kansas, and many of these have schools of many classes. Would it be impossible that some day each school district might have at least one of its young men or one of its young women at Manhattan?

By classes the attendance during the present College year has been as follows:

	Men	Women	Total
Graduate	10	16	26
Senior	90	57	147
Junior	132	70	202
Sophomore	266	91	357
Freshman	307	143	450
Subfreshman	363	165	528
Preparatory	105	29	134
Special	18	25	43
Dairy Course	26	....	26
Farmers' Short Course	173	....	173
Domestic Science Short Course	1	187	188
Totals	1491	783	2274
Counted twice	29	53	82
Totals	1462	730	2192

THE FACULTY.

The Faculty has remained intact during the year, *i. e.*, as organized by the Board at their meetings in June and July. There were additions to the teaching force in some of the departments and shifting of duties in others. Two weeks before the opening of the fall term the College lost one of its strongest teachers and most widely known members of the Faculty. Prof. B. S. McFarland died of overheating on September 3, '07, at the home of his daughter, Mrs. Tarr, near Millersburg, Ky., where he was visiting. Mr. McFarland was 69 years of age and had been a member of the College Faculty for eight years. He had

followed the profession of teacher for over fifty years, and had at the time of his death more years of educational work to his credit than any one in Kansas. He had a host of friends, and was generally recognized as a good teacher. His chair was filled by the election of Robert J. Barnett, B. S., of Manhattan.

At the beginning of fall term Prof. Oscar Erf, of the chair of dairying, resigned to accept a similar position in the Ohio State University and Agricultural College, and his place was filled by the election of Prof. John C. Kendall, B. S., State Dairy Commissioner of Kansas. The latter place was filled by appointing Mr. David M. Wilson, D. S., formerly assistant in the Dairy Department of the College. The professors, instructors and assistants elected at the June and July meetings of the Board have without exception proved to be strong men.

The resignations, at the March meeting of the Board, of Pres. E. R. Nichols, Director Chas. W. Burkett, of the Experiment Station, and Mrs. Henrietta Calvin, professor of domestic science, the first to take effect on July 1, 1909, and the other two on September 1, 1908, have produced vacancies in the three most important positions in the institution, and the "College family" hopes that the Board will be able to fill them with high-grade specialists worthy of the trust. No undue haste should be made in selecting the next President. The position is such a very important one that only men of tried administrative and scientific qualities should be considered. The coming President should be a man who, like President Nichols has taught exact science and has been an unqualified success in his work. He should be in full sympathy with this work and should himself be the product of a high-grade technical school.

Dr. C. W. Burkett came here in September, 1906, from North Carolina, where he had been professor of agriculture in the State Agricultural College. He has accepted the editorial chair of the publication department of the well-known firm Orange Judd Company, in New York. This firm publishes the *American Agriculturist*, the *Orange Judd Farmer*, the *New England Homestead*, *Farm and Home*, *Current Events*, and the popular magazine, *Good Housekeeping*. It is the oldest, wealthiest, and most noted agricultural publishing company in the world.

Mrs. Henrietta Calvin goes to Purdue University as professor of the department of domestic science. The growth of the department at this College under her care has been beyond all precedences. When she assumed the duties of the chair the total attendance of young women was about 375, while this year 869

young women took the regular work, 120 took the short course, and 29 the teachers' course (summer course)—a total of 1018. The number of assistants during these four years grew from one to five.

COURSES OF STUDY.

At the request of the Board of Regents the Faculty, during the winter term, revised the old courses of study and added several new ones. In addition to the common-school branches taught in all state schools the candidate for admission must now show proficiency in advanced English grammar, English readings, English composition, algebra through progressions, elementary botany, ancient, medieval and modern history. The Preparatory Department, for those who come from districts where this higher work is not taught, will be maintained. A year of graduate work was added to each of the four-year courses.

The regular courses offered for next year are as follows:

1. Agronomy
2. Animal Husbandry*
3. Dairy*
4. Horticulture*
5. Poultry*
6. Veterinary
7. Mechanical Engineering
8. Electrical Engineering
9. Civil Engineering*
10. Architecture
11. Printing*
12. Domestic Science
13. General Science

In addition to these full courses the College will, as in former years, offer a farmers' short course, a dairy short course, a short course in domestic science and art, a summer course in domestic science and art, and a six weeks' summer course in agriculture for teachers. Any one desiring information in regard to any of these courses should write to the College for catalogue and other descriptive matter.

The six courses marked * are new, and will be offered for the first time. The freshman year is the same in all courses, thus a selection of the course to be taken need not be made till the beginning of the sophomore year. Graduates from any of the four-year courses will be granted the degree of Bachelor of Science. Students completing the graduate year will be granted a special bachelor's degree indicating the course completed, except in the veterinary course, where the degree will be Doctor of Veterinary Medicine.

During the last few months there has been considerable discussion in the press of the State concerning the relation of the Agricultural College and the State University with regard to the duplication of work in engineering lines. The College has said but little and the INDUSTRIALIST has abstained from saying a

word about the matter, yet the dailies of Topeka, Kansas City and Lawrence persistently published articles demanding that the College should provide but one course—agriculture—and that it has no business to organize courses in engineering.

The one-sided controversy became so loud that Governor Hoch appointed a conference between the regents of the University, the College and the State Normal School to investigate whether there was any unnecessary duplication of courses. The meeting was held at Topeka in April, but there were no results except that each party presented its views and claims, and that a committee of two regents from each institution was appointed to investigate the matter more fully and report to the governor later. In the meantime another wordy controversy was started by the *Students' Herald*, which proposed to change the name, Kansas State Agricultural College, to State College. A number of papers worked themselves into a fit over this proposed change and soundly abused the Faculty for something in which they had taken no part, and which they did not advocate.

The answer of the College in respect to both questions is simply this: The institution was founded by an act of congress giving the State of Kansas 90,000 acres of land for providing a college "for the benefit of agriculture and the mechanic arts, where the leading object shall be to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote a liberal and practical education of the industrial classes in the several pursuits and professions in life." This endowment, liberally added to by further acts of congress, all of which are very explicit in stipulating the mechanic arts and professions as well as agriculture, was accepted by the State, and it obligates the College to do what it is doing. We simply do what other land-grant institutions in every state in America are doing.

COLLEGE EXTENSION.

The Kansas State Agricultural College, not satisfied with teaching the two thousand young people who matriculate here, has for the past year extended its teaching lines in several directions.

Farmers' Institutes.—To-day Kansas has regularly organized county institutes in ninety-nine counties, and the hundredth county has a flourishing local institute. There are ninety-two local farmers' institutes, making a total of one hundred ninety-one regularly organized farmers' institutes with a total of about five thousand members who have paid fees, with probably four hundred more who are members of institutes that have no mem-

bership fee. Since last July one hundred seventy regular institutes have been held with one or more College speakers present, and a total attendance of 32,234, and the institute associations in Kansas have held since December 14, '07, over seven hundred special Saturday afternoon meetings. Subjects of special emphasis during the year were "Live Stock" and "Alfalfa."

Boys' Corn Contests.—Of the five thousand boys in the corn contest this year about one thousand between the ages of fourteen and twenty-one have entered regularly in the ear-to-row test, each planting ten ears in ten rows. This promises to be of momentous value to the corn-growing interests of Kansas as well as a great educational lesson for these young men. All contestants are supplied with literature on growing corn, selecting seed-corn, etc., from the Kansas Experiment Station and from the Department of Agriculture at Washington.

Demonstration Work.—An effort was made this year to enlist the hundreds of institute members into a great demonstration class, putting to a practical test recommendations made by members of the Experiment Station staff. About seven hundred farmers have reported a willingness to undertake some of the demonstrations, but doubtless several times that number are working on some of them with just as good effect, but without having so reported.

Literature Published.—The Regents authorized last June the publication of two series of pamphlets, one for members of farmers' institutes and one for public school-teachers. Six pamphlets of the first series, "Swine," "Farm Dairying," "Poultry," "Sheep," "Dry-Land Farming," and "Making Hay," have been printed and mailed to members. About three thousand additional copies of each of the last two have been mailed to institute officers for distribution to those who are not members. One more number of the series, "The Farm Horse," will be printed about the last of June. The Agricultural Education Series included "Soil," "How Plants Feed and Grow," "Hygienic Cookery," "Tree Culture," and "Bird Life." These have been mailed to all rural school-teachers where county superintendents have mailed the names of their teachers, only three superintendents declining to send in such list. These numbers have been mailed to others on request, and the last two numbers were also sent to all farmers' institute members. In addition to these two series this office has distributed, within the last year, ten thousand circulars on "Alfalfa," about six thousand pamphlets on "Wheat," two thousand on "Cow-Peas," eight thousand on "Corn

Judging," two thousand bulletins on "Indian Corn," and about two thousand government bulletins on subjects of interest to various members of our farmers' institutes, in addition to over two thousand bulletins and pamphlets on a variety of subjects bearing upon subjects of interest to institute members or young men of our demonstration class.

These are the leading lines of work now being carried on by the Agricultural College Extension and Farmers' Institute Department. Several other lines have been inaugurated by Institute Superintendent J. H. Miller, but need not be discussed here. The department work will cost the State about $6500 this year, $4500 being a direct appropriation from the legislature and $2000 additional being appropriated by the Regents. More than $1400 may be charged up to correspondence with prospective students, or with young people who are either interested in the College or in work of the Experiment Station. A correspondence course, intended primarily for short-course students, has been started, although it is open to any who may want to undertake the study of a good book. The work of assisting graduates into positions as teachers is only in its infancy, but it is needed and must grow into great usefulness. From July 1, 1907, to June 10, 1908, the office mailed 16,030 two-cent letters, 20,912 one-cent letters and over 125,000 pamphlets.

The possibilities of the department are very great, only needing more funds to enable it to carry the College ideas into the uttermost parts of the State. The subjects for special emphasis for next year will be insect problems, good roads, orcharding, forestry, live stock, and dry-land farming.

ATHLETICS.

The College has always maintained a conservative position with regard to athletics. It has believed in systematic physical exercise for all the students rather than over exercise of a few. For many years it has maintained a department of physical training for young women, provided a small gymnasium and engaged a teacher for their benefit. The young men take military drill one hour per day, and the well-disciplined and handsome College battalion has for years been a matter of pride. Less attention, however, has been given to team athletics, and there has been an utter lack of quarters for such work. Notwithstanding this the College teams have won laurels from year to year, and the present year has been no exception. The football team of last fall term was one of the very best in the West. During the present spring term the baseball team scored an unbroken string of twelve victories in

the College circuit. It played fourteen college games, winning a dozen, losing one and tying one, making a total of 769 points, which gives it the undisputed championship in the State. The last two games were played with the State University and resulted in scores of 2 to 1 and 1 to 0 in favor of the College. Good for our boys! The next legislature will have to provide funds for a gymnasium and drill hall.

FOOD ANALYSES.

A part of the work of the Chemical Department consists in the examination of food stuffs for the State Board of Health. By law it is the duty of the chemical departments of the University and of the Agricultural College to do this work. To promote economy and efficiency, it has been arranged that the analyses made at the College shall be for the most part those of dairy products, meat, fish, etc., and cereal foods. To perform this work an assistant has been employed who gives his entire time to it.

The results of this work are reported to the secretary of the State Board of Health and are published by him in the bulletin of the board in so far as the public interest seems to demand it. Of the work thus far published that upon oysters has attracted much attention, not only in this State but in many other states. The investigation has caused a very marked improvement in the quality of the oysters sold in Kansas. Many samples of milk, cream and ice-cream have been examined. The ice-cream campaign is not fully on as yet, but the results show that there is much need of thorough supervision of all of these products. The companies furnishing milk to large cities apparently aim to bring their product to as low a standard as the law will permit. The Chemical Department has coöperated with the State Dairy Commissioner also in making analyses of dairy products. Results show that there is much need of attention to improving the conditions of butter manufacture, cream sampling and testing, etc.

Space does not permit naming numerous other lines of work which have touched products of less commercial importance.

THE EXPERIMENT STATION.

This department of the College is maintained by annual appropriations by the United States government and has been in operation since 1888. The results of the experiments in the different departments of research are published in the form of press bulletins, station bulletins, and annual reports, which are distributed free of charges to the parties directly interested. An enormous amount of scientific and practical reading matter is thus

being furnished annually to newspapers, to farmers, stockraisers, dairymen, orchardmen, and to the agricultural press. During the present year the Station published eight bulletins and six press bulletins, and the matter for several additional pamphlets is practically in shape for the printer. Last summer, in accordance with an act of the legislature, Director Charles W. Burkett, of the Station, visited Southern Europe and Russia to study the conditions of the wheat sections of those countries and to find new varieties of wheat that might be tried in Kansas. This summer Prof. Herbert F. Roberts is investigating the conditions of the wheat-producing regions of Italy and the Danube countries to the same end. There has been much work done in breeding up and crossing varieties of wheat, corn, alfalfa, and other farm and garden crops. The newly acquired experimental farm of some 3500 acres at Fort Hays has been put in good shape for feeding and field experimental work. The Station has sent out large quantities of improved or new seeds to applying parties and has carried on an extensive correspondence with other stations working along similar lines of investigation. The following list of Station bulletins and press bulletins issued during the year will indicate the variety and scope of the work done:

BULLETINS.

148, Law Regulating Sale of Commercial Fertilizers, by C. W. Burkett and J. T. Willard, July, 1907.

149, Prevention of Sorghum and Kafir-corn Smut, by H. F. Roberts and Geo. F. Freeman, July, 1907.

150, The Hen's Place on the Farm, by Oscar Erf, October, 1907.

151, Alfalfa Breeding: Materials and Methods, by H. F. Roberts and Geo. F. Freeman, December, 1907.

152, The Pocket Gopher, by Theo. H. Scheffer, February, 1908.

153, The Mound-Building Prairie Ant, by T. J. Headlee, April, 1908.

154, The Deterioration of Red Oats in Kansas, by H. F. Roberts and Geo. F. Freeman, May, 1908.

155, Alfalfa, by Members of Station Staff, June, 1908.

PRESS BULLETINS.

156, Egg-Laying Contest, by Oscar Erf, July, 1907.

157, Alberta Seed Wheat, by A. M. Ten Eyck, September, 1907.

158, Destroying Pocket-Gophers, by Theo. Scheffer, December, 1907.

159, Green Bug, by T. J. Headlee, February, 1908.

160, A Great Need for Saving Soil Moisture This Spring, by L. E. Call, April, 1908.

161, The Chinch-Bug, by T. J. Headlee, June, 1908.

162, Late Crops, A. M. Ten Eyck, June, 1908.

Twentieth Annual Report, July, 1907.

THE POISON LABORATORY.

In the winter of 1901 the State legislature organized a laboratory for the manufacture of poison for the extermination of the prairie-dog and the pocket-gopher and located it at the Kansas State Agricultural College. Prof. D. E. Lantz, formerly of this institution, was engaged as expert and agent, and under his direction large quantities of the poison mixture were sold at cost directly to the farmers. In October, 1904, the professor resigned to accept the position of "Expert on Mammals" in the Agricultural Department at Washington, D. C., and the laboratory became a part of the Department of Entomology and Zoölogy of the College. The two rodents have been much diminished in all parts of the State, but large quantities of the poisons are still being sent out every month. The demand is especially brisk in the fall, when it requires the full time of an assistant to make and ship the mixtures. Professor Headlee reports that for the past eleven months the Department of Entomology and Zoölogy has sold about 550 quarts of the pocket-gopher poison and 1100 quarts of the prairie-dog mixture. Full directions for using the poison are sent out with every can. The department has also published a number of bulletins on the subject. Prof. D. E. Lantz published press bulletins (Nos. 97, 108, 109, 119, 130, 132, and 153) on the habits of the rodents and their destruction and Experiment Station Bulletin (No. 129) on "The Mammals of Kansas," in which much space was given to the discussion of the two pests and their extermination. Last February Instructor Theo. H. Scheffer published a 148-page pamphlet (Experiment Station Bulletin No. 152) on the distribution, habits, natural enemies and methods of extermination of the pocket-gopher. Of other matter on the subject published during the year may be mentioned Press Bulletin No. 158, on Destroying Pocket-Gophers. Professor Headlee has in preparation an article for the INDUSTRIALIST discussing this work of the College.

BUILDINGS.

The last legislature was kind to the Agricultural College. For the first time in the history of the College did the fathers of the country recognize the claims of the great technical college and provide for more than one new building. An increase of over two hundred fifty students per year requires additional class rooms, laboratories, and shops. Even in a common school, where no laboratories are needed, it would mean an addition of ten rooms and ten teachers. In a technical institution it means more expansion than this. The appropriations provided for a new Do-

mestic Science and Art Hall costing $70,000, a new Veterinary Science Hall costing an equal sum, and a new Engineering Hall costing $80,000. Provisions were also made for a new greenhouse and about four thousand dollars' worth of cement walks. These appropriations are now practically expended and the buildings and improvements are under way, most of them nearly completed. The plans and specifications were prepared by State Architect F. Stanton and the erection of the buildings was superintended by Prof. J. D. Walters, of the Department of Architecture of this College. The style of architecture is similar to that of the older buildings—a substantial, common-sense modern Romanesque. The stone was quarried on the College farm and is an excellent building material—cheap, nearly white, durable, and characteristic. There is not an institution in the State or in the West that has been so fortunate as this College in discovering such a stone in its vicinity and making such good use of it. The "City on the Hill" is the pride of Kansas.

CONCLUSION.

It is not possible in a short article to mention all the work carried on by the different departments of the College that deserve to be mentioned. In many departments, too, the product of the year's work is not in visible shape so that it can be exhibited. The patient and effective educational efforts of the teachers of pure science, language, drawing, shop work, etc., done in over half a hundred class rooms and laboratories have produced results that will appear in years to come in the form of better and more useful men and women, a better and higher civilization on the plains of Kansas. The College feels once more that it has done its full duty. THE INDUSTRIALIST believes with the *Farmers' Advocate*, which says in its last number:

"That the Kansas State Agricultural College and Experiment Station is doing good work for the farmers of the State, and will compare very favorably with other similar institutions of western states, that this work is being carried on under financial difficulties, that the institution does not have financial support equal to that of other similar State institutions, and that in proportion to the amount of money available the Kansas State Agricultural College is doing more work than any other similar institution."

J. D. WALTERS.

The Manhattan city council has let the contracts for the curbing of Poyntz Avenue and Juliette Avenue, a total of over twenty thousand feet.

Local Notes.

Mr. C. Walker, electrical engineer, has accepted a position with the Edison Light and Power Company, Wichita, Kan.

Seniors Young and Jacobus have been testing the flaming arc lamp as a part of their theses subjects. These lamps will probably be used on the campus during Commencement week.

Assistant Call, of the Agronomy Department, gave a talk on "Soil and Fertility," in the Riley County Teachers' Institute last week. A number of other professors and assistants will be asked to give short lectures on agricultural topics.

Contractor Henry Bennett has completed the erection of the steel trusses that carry the glass roof of the clinic of the new Veterinary Science Hall. The placing of these huge beams give one an idea of the magnificent size and form of this large room. It is safe to say that it will be the finest demonstration amphitheatre in the country.

The annual competitive drill between the companies of the cadet battalion will occur Tuesday, June 16, at 2:45 P. M. The captain of the winning company will receive a prize of a gold-headed cane now on exhibition at Askren's jewelry store. Maj. Wm. J. Nicholson, 7th cavalry, a former instructor of military science at the College, will act as judge.

Professor A. S. Hitchcock, formerly of the Department of Botany of this College, and for the past half-dozen years botanical expert in the Department of Agriculture, Washington, D. C., is visiting his family, who live on a farm near Manhattan. The Professor looks well and evidently enjoys life. Last Saturday he delivered the address at the graduating exercises of College Hill school.

The senior-Faculty game, played last Wednesday afternoon in the Manhattan Athletic Park, resulted in a victory for the latter, the score being 4 to 6. The senior-assistant game had a similar result, the score being 1 to 4 in favor of the assistants. The games were witnessed by twelve hundred spectators and was interesting and funny. Several members of the Faculty proved to be expert players, notably President Nichols, Doctor Headlee, Doctor Burkett, and Professor McCormick. The base running of the Faculty was spectacular.

Assistant E. G. Meinzer, of the German Department, intends to leave on June 17 for Central Europe to study modern languages during the summer vacation. He will spend most of the available time in the old university towns of Heidelberg and Zurich, but will make trips into the Swiss Alps and into parts of South Germany. Mr. Meinzer, although a born American, speaks the German language fluently and will enjoy studying the idioms of the "Vaterland." He has promised the INDUSTRIALIST a cablegram in case he gets a chance to shake hands with "Bill, the Kaiser."

Alumni and Former Students.

Emma Doll, '98, is attending the State Normal School at Emporia this summer, and expects to be graduated from that institution at the close of the term. Her present address is 1017 Mechanic street.

H. F. Butterfield, '01, will attend Bradley Polytechnic Institute, Peoria, Ill., this summer. He will leave Mrs. Butterfield (Florence Vail, '01) and little son here, where all of them are visiting at present.

E. Jeanetta Zimmerman, '91, and Maud Zimmerman, '02, visited the College a few days on their way home from Provo, Utah, where they have been teaching in the Congregational Mission School at that place.

Changes of address: F. H. Meyer, '97, 522 Dugarro, Kansas City, Kan.; C. W. Earle, '90, 1303 Pine street, St. Louis, Mo.; C. M. Buck, '96, and Winifred (Houghton) Buck, '97, Oskaloosa Kan.; Grace McCrone, '04, Olathe, Kan.

M. M. Hastings, '06, who is now an assistant in animal husbandry in the Department of Agriculture, visited the College a few days this week. He is investigating the problems of the preservation of eggs in cold storage and has devised an ingenious instrument for determining the humidity of the air of cold-storage chambers.

Friends in this city will be interested to learn of the marriage of Miss Ella Criss, '04, and James Correll, '03. The ceremony takes place to-day [June 11] at the bride's home, in Anaheim, Cal. They will be at home after September first in Austin, Texas, where Mr. Correll is employed as electrical engineer in the university at that place.—*Nationalist.*

A quiet but very pretty wedding occurred at high noon, Wednesday, June 10, at the home of Dr. and Mrs. L. R. Brady, when Miss Hope Brady, of this city, and Mr. William Anderson, of Houghton, Mich., were united in marriage. Rev. D. H. Fisher, of the Presbyterian church, performed the ring ceremony, which was witnessed by relatives of the bride. After congratulations had been offered, an elegant wedding dinner was served in the dining-room, fragrant with many roses. The bride's table was decorated with an exquisite centerpiece of white roses and lilies. On each place card a spray of purple and white clematis was laid, which were the class colors of '98 at the K. S. A. C., where Professor and Mrs. Anderson graduated. After Commencement they will go to Houghton, Mich., where Mr. Anderson is professor of mathematics in the School of Mines. In the marriage of Miss Brady, Riley county has lost one of her very efficient school teachers, having taught the past nine years. Professor and Mrs. Anderson have many warm friends here who offer sincere wishes for a happy, prosperous wedded life.—*Nationalist.*

Board of Instruction (*concluded*).

JACOB LUND, M. S. (K. S. A. C.).....Superintendent Heat and Power Department
JOHN H. MILLER, A. M.....Superintendent Farmers' Institutes
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.).....Secretary
CLARENCE L. BARNES, D. V. M. (Cornell).....Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B. S. (Chicago).....Assistant Professor of Physics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.).....Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.).....Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard).....Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.).....Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.).....Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K. S. A. C.).....Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago).....Assistant Professor of Mathematics

---

Miss Ada Rice, B. S. (K. S. A. C.).....Instructor in English
Miss Ella Weeks, A. B. (U. of K.).....Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount).....Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University).....Instructor in Veterinary Science
Robert E. Eastman, M. S. (Cornell University).....Instructor in Horticulture
Miss Ula M. Dow, B. S. (K. S. A. C.).....Instructor in Domestic Science
Theo. H. Scheffer, A. M. (Cornell University).....Instructor in Zoölogy
Herbert H. King, M. A. (Ewing College).....Instructor in Chemistry
John B. Whelan, B. S. (Nebraska).....Instructor in Chemistry
William L. House.....Foreman of Carpenter Shop
Miss Gertrude Barnes.....Assistant Librarian
Louis Wabnitz.....Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.).....Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.).....Foreman of Foundry
Miss Emma J. Short.....Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.).....Assistant in Domestic Art
Miss Kate Tinkey.....Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C.).....Assistant in Printing
Roy A. Seaton, B. S. (K. S. A. C.).....Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College).....Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.).....Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale).....Assistant in Architecture and Drawing
Chas. Yost.....Assistant in Heat and Power Department
Earle B. Milliard.....Foreman of Blacksmithing
J. T. Parker.....Assistant in Woodwork
J. D. Magee, A. M. (Chicago).....Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit).....Assistant in German
Miss Florence S. Latimer, B. M. (Ferry Hall Seminary).....Assistant in Music
Miss Marjorie Russell (Mechanics' Institute).....Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.).....Assistant in Botany
Burton Rogers. D. V. M. (Iowa State College).....Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal).....Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.).....Assistant Chemist, Experiment Station
Edw. C. Crowley, Ph. B. (Yale).....Assistant in Chemistry
Hugh Oliver.....Assistant in Heat and Power Department
Miss Charlaine Furley, B. A. (Fairmount).....Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (U. of K.).....Assistant in Preparatory Department
Leland E. Call, B. S. (Ohio State University).....Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University).....Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.).....Assistant in English
William C. Lane, B. S. (K. S. A. C.).....Assistant in Physics
Louis H. Beall, A. B. (Denison).....Assistant in English
Miss Flora C. Knight, A. B. (Uni. of Wyoming).....Assistant in English
Miss Grace H. Woodward (Boston School of D. S.).....Assistant in Domestic Science
Miss Nellie Cave, B. M. (Univ. of Nebr.), (Chicago Music Coll.).....Assistant in Music
Miss Anna I. McKirahan.....Assistant in Music
Miss Margaret Mack (K. S. N.).....Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.).....Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.).....Assistant in Botany
Charles E. Bassler, D. V. M. (K. S. A. C.).....Assistant in Veterinary Science
Miss Mary W. Hancock (Mechanics' Inst.).....Assistant in Domestic Art
S. W. McGarrah, A. M. (Grove City College).....Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.).....Assistant in Animal Husbandry
Arthur L. Peck, B. S. (Mass. Ag. Coll.).....Assistant in Horticulture
Kirk H. Logan, B. S. (U. of K.).....Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College).....Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University).....Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College).....Assistant in Preparatory Department
Loren Clark.....Assistant in Printing
Miss Bertha M. Johnston (Simmons College).....Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.).....Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University).....Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.).....Assistant in Agronomy
Earle Brintnall, B. S. (Iowa State College).....Assistant in Dairy Husbandry
J. B. Parker, M. A. (Ohio State University).....Assistant in Entomology
William Neill.....Dairy Herdsman
G. A. Porteous.....Herdsman
Wm. A. Lamb.....Poultryman
Floyd Howard.....Farm Foreman
William R. Lewis.....Custodian

Historical Society

COMMENCEMENT NUMBER.

THE INDUSTRIALIST

Vol. 34 No. 37

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas



Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

The Industrialist.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

TERMS AND VACATIONS.

FALL TERM, 1907, THIRTEEN WEEKS.

Thursday, Friday, and Saturday, November 28, 29, and 30.....Thanksgiving vacation
Thursday and Friday, December 19, 20.....Examination at close of term

WINTER TERM, 1908, TWELVE WEEKS.

Monday, January 6.....Examination for admission, at nine A. M
Tuesday, January 7.....Winter term begins
Tuesday, January 7.....Short courses in agriculture and dairying begin
Saturday, February 1.....Annual intersociety oratorical contest
Saturday, February 15.....Mid-term examination
Thursday, March 19.....Annual concert
Thursday and Friday, March 26, 27.....Examination at close of term

SPRING TERM, 1908, ELEVEN WEEKS.

Monday, March 30.....Examination for admission, at nine A. M.
Tuesday, March 31.....Spring term begins
Saturday, May 9.....Mid-term examination
Tuesday, May 19.....Beginning of summer course in domestic science
Tuesday and Wednesday, June 16, 17.....Examination at close of year
June 14 to 18.....Exercises of Commencement week
Thursday, June 18, at ten A. M.....Commencement
June 19 to September 16.....Summer vacation

FALL TERM, 1908,

Wednesday, September 16.....Examination for admission, at nine A. M.
Thursday, September 17.....College year begins

BOARD OF REGENTS.

HON. A. M. STORY, President.....Manhattan
HON. J. O. TULLOSS ['99], Vice-President.....Sedan
HON. J. S. MCDOWELL.....Smith Center
HON. GEO. P. GRIFFITH.....Hays
HON. EDWIN TAYLOR.....Edwardsville
HON. W. E. BLACKBURN.....Anthony
PRES. E. R. NICHOLS, Secretary *ex-officio*.....Manhattan

BOARD OF INSTRUCTION.

ERNEST R. NICHOLS, A.M. (University of Iowa).....President
CHARLES WM. BURKETT, M. Sc (Ohio State University).....Director Experiment Station
JOHN D. WALTERS, M. S. (K. S. A. C.).....Professor of Architecture and Drawing
JULIUS T. WILLARD, M. S. (K. S. A. C.).....Professor of Chemistry, Vice-Director Exp. Station
BENJ. L. REMICK, Ph. M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B. S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A. B. (U. of K.), M. S. (K. S. A. C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph. M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S. B. (Mass. Inst. Tech.), Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M. S. (K. S. A. C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph. D. (Univ. of City of New York).....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B. S. (K. S. A. C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College).....Professor of Economics
JOHN V. CORTELYOU, A.M. (Uni. of Neb.), Ph. D. (Heidelberg).....Professor of German
OLOF VALLEY, B. M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D. V. S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B. S. A. (Iowa State College).....Professor of Animal Husbandry
WALTER E. KING, M. S. (Cornell).....Professor of Bacteriology
THOMAS J. HEADLEE, Ph. D. (Cornell).....Professor of Entomology
CHAS. H. BOICE, First Lieutenant Seventh Cavalry, U. S. A.....Professor of Military Science
JOHN C. KENDALL, B. S. (N. H. A. & M.).....Professor of Dairy Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art
MISS ANNE M. BOYD, A. B., Lib. Sci. (Millikin).....Librarian
ROBERT J. BARNETT, B. S. (K. S. A. C.).....Principal Preparatory Department

(Board of Instruction concluded on last page.)

THE INDUSTRIALIST.

VOL. 34. MANHATTAN, KAN., JUNE 27, 1908. No. 37

Commencement of '08.

The most prosperous school year in the history of the Kansas State Agricultural College ended Thursday, June 18, when the institution sent out into the world of actual and practical life a graduating class of 113 young Kansans—the largest class that has been graduated from its chapel platform. Owing to excessive rains and to floods in the valleys of the Kaw and its tributaries, the exercises of Commencement week were not as well attended as usual, but there were large numbers present on the last day, and the whole program for the week was well rendered. The following pages, consisting mainly of excerpts from the columns of the three Manhattan papers, will tell those who could not be with us what we did.

THE BACCALAUREATE SERMON.

Commencement week began at the College Sunday afternoon at 4 o'clock when Dr. Robert E. L. Jarvis, pastor of the Presbyterian church at Winfield, delivered the annual baccalaureate sermon to the senior class.

Doctor Jarvis' subject was "Life Immortal," preaching from the text, "If a man die shall he live again?" Doctor Jarvis showed that the best philosophers and scientists, starting with no prejudice on the subject and striving only to arrive at the truth, were unable to reach any conclusion, but he asserted that there is a life after death for men, and gave some of the arguments used in reaching this conclusion.

While Doctor Jarvis introduced his congregation to no new or startling idea, his talk was interesting. He is an orator as well as a scholar and a thinker. He is a big, rather good-looking man. By effective pauses, gestures, and modulations of the voice he holds the attention of his audience, and therefore makes it easy for his hearers to follow his line of argument.

THE RECITAL.

Monday night the annual recital by the Music Department of the College was given in the Auditorium. The program, given entirely by the students, reflected much credit on the department.

The instructors in music are Olof Valley, professor; R. H. Brown, assistant professor; Miss Florence Latimer, Miss Nellie Cave, Miss Anna McKirahan, assistants; Miss Bessie Nicolet, accompanist.

The program was as follows:

Die Lustige Wittwe ..... *Lehar*

ORCHESTRA.

Die Loreley ..... *Seeling*

IRENE INGRAHAM.

Ah! I have sighed to rest me ..... *Verdi*

E. E. BEIGHLE.

Joyous Moment ..... *Moszkowski*

URSA JOSLIN.

Fantasie Caprice ..... *Vieuxtemps*
Andantino. Theme and Variation. Finale.

MAURICE J. OTEYZA.

The Chase ..... *Heller*

BESSIE MOORMAN.

The Wanderer ..... *Schubert*

EDNA BIDDISON.

Murmuring Zephyrs ..... *Niemann-Jensen*

ESTHER CHRISTENSEN.

Rondo Capriccioso ..... *Mendelssohn*

DE NELL LYON.

O My Fernando ..... *Donizetti*

HALLIE SMITH.

Waltz Op. 64, No. 1 ..... *Chopin*

GLADYS NICHOLS.

Le Regata de Veneziana ..... *Liszt*

EUGENIA FAIRMAN.

(*a*) A Song of Thanksgiving ..... *Allitsen*
(*b*) Faith in Spring ..... *Schubert*

GRACE SMITH.

Fantasie ..... *Brahms*

MARIA MORRIS. MARGARET MORRIS.

THE SENIOR PLAY.

The play, "One Summer's Day," given by the seniors Tuesday night, was greeted by a large and appreciative audience at the Auditorium. The plays given each year by the senior class are considered the star entertainments that are staged at the College, and "One Summer's Day" was fully up to the standard of the plays given in past years.

The two leading characters were Major Rudyard and Miss Maysie. These were ably portrayed by Jack Taft and Hallie Smith. Mr. Taft's acting was especially good. Miss Smith played her part well and showed a great deal of talent for an ama-

teur. Sol. Cunningham, who was to have taken the part of Phil Marsden, was unable to be present on account of the death of his father, and Bea Cave, who had the part of "Seth," the Gypsy, also played the part of Marsden. As he only had one day in which to learn the new role, he did remarkably well. Elsie Kratsinger greatly pleased the audience with her portrayal of Chiara. The play was directed by Miss Elinor Lincoln, of Topeka.

The following was the list of characters:

Major Dick Rudyard.....E. S. Taft
Phil Marsden.....Bea Cave
Theodore Bendyshe.....H. A. Praeger
Robert Hoddesden.....Fred M. Hayes
Tom, his nephew.....H. E. Bixby
Seth, a Gypsy.....Bea Cave
The Urchin.....Rae Nichols
Irene, Hoddesden's niece.....Nell Wolf
Maysie, his ward.....Hallie M. Smith
Mrs. Theodore Bendyshe.....Stella Ise
Bess, a Gypsy.....Eva Alspaugh
Chiara, a Gypsy.....Elsie Kratzinger

THE ALUMNI MEETINGS.

The triennial business meeting of the Alumni Association was held Wednesday afternoon in the College Auditorium, and was well attended considering the almost impassable roads and the fact that two of the railroads leading into Manhattan had been put out of use by the flood. The following new officers were elected: President, Jacob Lund; vice-president, Mrs. E. H. Bowen; secretary, Miss Marcia Turner; treasurer, Mr. Lane.

In the evening Prof. Ernest F. Nichols, '88, of the department of experimental physics, Columbia University, New York, delivered the triennial alumni address. He spoke on the subject of "Recent Discoveries in Physical Science," and handled the subject in a very interesting and creditable manner. The professor is one of the most talented men that graduated from this College and is evidently all aglow with his life work. A number of highly interesting scientific discoveries stand to his credit and are being discussed by experimenters on both sides of the Atlantic. As Professor Nichols had to leave in the evening for California, where he will deliver an address before the scientific societies of Leland Stanford University, many of us did not have the pleasure of a private chat for which we had hoped.

COMMENCEMENT DAY.

Commencement day began clear and bright and the weather remained perfect till long after midnight, except for a driving shower about six o'clock. The roads dried rapidly and the campus looked greener and fresher than ever. Long before 10

A. M. the main floor of the large Auditorium was filled to the last seat and the galleries were being occupied. The exercises began with a march, "On Duty," by Rosey, and a selection, "Intermezzo," by Mascagni, played by the College Orchestra under the leadership of Prof. R. H. Brown. After prayer and the overture, "Martha," Pres. E. R. Nichols introduced the speaker of the day, Dr. Albion W. Small, dean of the graduate college and professor of sociology of the University of Chicago, who stepped forward in a frank manner and addressed the class seated on the platform. The doctor spoke without manuscript or notes; his voice was strong and clear and his language unusually precise and simple. The address was a literary treat and will be long remembered by all who heard it. He said in part:

"I intend to speak to the graduating class rather than to the audience, and shall tell them of no new things or new theories. I shall simply emphasize at this opportune time three or four thoughts which you, my young friends, have undoubtedly entertained as you approached Commencement; that is, the end of your College course.

"The first thought is based on the experience of thousands of business men and farmers. It is this: that success comes to him who is willing to remain a student all his life; to the man who absorbs knowledge in the thousands of ways in which it comes to him; to the professionalist or farmer who keeps his eyes open.

"The second thought is that wisdom and knowledge are not identical; that wisdom is knowledge properly digested, assimilated, and applied. This fact explains why men of comparatively little learning are often highly successful, because they know how to assort, associate and apply what they do know. Their experience is not simply a chronological history of past events in life, but a living fountain of applicable truths.

"Another thought is this, that in order to be successful a man must be honest toward himself and toward others. He must be independent to a considerable extent from current notions and truthful with regard to all his utterances and doings. Honesty and truth are growing principles in business, politics, religion, and every other line; they are being recognized as cornerstones of success in every undertaking. The honest man will take a firm stand for facts, common-sense applications, good government, and sound progress. He will refuse to imitate, refuse to be driven, and refuse to be formal and conventional.

"Another thought is this, that the aforesaid man, that is, the student, the wise man, the honest man, will fit himself easily into

the strenuous life which the modern man must live and will, in spite of the great demand which the world makes upon him, live a simple life. He will not ask of life what it can not grant him; he will live from within as well as from without, and his will be a life of peace and good cheer."

CONFERRING OF DEGREES.

After a grand chorus by the College Choral Union, under the leadership of Prof. Olof Valley, President Nichols conferred the degree of Bachelor of Science on the 113 members of the class of '08, and the degree of Master of Science upon two graduates. Following is a list of the class and the graduates, together with their theses subjects:

Jessie Patience Allen,
The Present-Day Problem of Woman's Education.

Eva Irene Alspaugh,
Dietary of Students.

Marie Rilda Bardshar,
Effects of a Fruit and Nut Diet.

Ernest Elmer Beighle,
City Library.

Hulda L. J. Bennett,
A Character Study.

George P. Berger,
Efficiency of Storage Batteries. Chloride Accumulation Type.

Edna Eleanor Biddison,
Twelve Laboratory Experiments in Electricity for Secondary Schools.

Horace E. Bixby,
Operation of a 3-phase General Electric Alternator as a Syncronous Motor.

Mabel J. Bower,
An Ideal Dining-Room and Its Care.

Raymond W. Brink,
Some Recent German Fairy Tales. A Translation.

James E. Brock,
A Plan for Forest Planting in Central Kansas.

Ruby Mildred Buckman,
The Meaning of Emotion as Related to Human Conduct.

Elmer A. Bull,
A Public Art Gallery.

Ralph Elmer Caldwell,
Sweet Cream Butter.

Walter W. Carlson,
Comparative Tests of Different Tool Steels in Machine Work.

Wayne B. Cave,
Military Tactics as Used by the Philippine Insurgents.

Ralph Thompson Challender,
Comparative Tests of Different Tool Steels in Machine Work.

Esther Evangeline Christensen,
Domestic Science in County High Schools.

Katherine Cooper,
The Qualitative and Quantitative Bacteriological Analysis of the Manhattan City Water.

Alexander B. Cron,
The Kinds and Classes of Cereal Grains Grown in the United States and Methods of Marketing Some, With Special Reference to Grading Grain Commercially.

Sol Whitney Cunningham,
Are Regional Characteristics of Tree Growth Transmitted Through the Seed?

Bernice Ada Deaver,
Economic Function and Value of Trades Unions.

Maxwell C. Donley,
Design of a 75 K. W. Power Station.

Charles Doryland,
Relation of Rain Fall to Soil Moisture.

Florence Edith Dresser,
Some Modern German Fairy Stories.

George Richard Eaton,
Plans and Specifications for Installation of a 300 K. W. 3-Phase Unit for Manhattan Power Station.

Mary Amy Elder,
Twelve Lectures on Domestic Science.

Louise Fleming,
Outline for Chautauqua Demonstrations in Domestic Science.

Carl Forsberg,
Efficiency and Regulation Tests of G. E. Transformer, Type H, No. 497209.

Mary Eliza Gaden,
Applied Design in the Home.

David Emerson Gall,
Oophorectomy.

Erma Gammon,
Plans for Country Homes in Semi-Arid Regions.

Clarence T. Gibbon,
Efficiency Test of the Chapman Hydro-Electric Plant.

Oliver Holmes Gish,
The Climatology of Kansas.

George G. Goheen,
The Interpole Motor.

Cecile Agnes Graham,
The Ideal Kitchen.

J. Olin Graham,
The Forest Resources of Texas.

Edna Gertrude Grizzell,
A Course of Study in Domestic Science for Seventh Grade.

Helen Hay Halm,
Fireless Cookery.

Dora Inez Harlan,
The Eastern Question.

Frank Clyde Harris,
Design for a Municipal Water Works Building.

Maude Harris,
Color Scheme for Decorating a Residence.

Thomas Powell Haslam,
The Reducing Action of Sodium Hydrosulphite Upon Certain Organic Substances.

Elizabeth F. Hassebroek,
Some Modern German Fairy Stories.

Fred M. Hayes,
A Study of the Agglutination Method in the Diagnosis of Glanders.

Leon George Hoffman,
Plans and Specifications for Installation of a 300 K. W. 3-Phase Unit for Manhattan Power Station.

Edith Antonette Holmberg,
Some Recent German Fairy Tales.

Annice Howell,
Development of Music.

Ralph W. Hull,
Commercial Seed-Corn Breeding.

Helen Knostman Huse,
Some Modern German Fairy Stories.

Estella May Ise,
Evolution of the Industries of Women.

Elmer Johnson,
Tests to Determine Relative Values of Various Grades of Gasoline and Kerosene as Fuel for Internal Combustion Engines.

Edward M. Johnston,
Forest Preservation and Forest Laws.

John Seneca Jones,
Rise of Forestry in the United States.

Edith B. Justin,
Causes of Fermentation in Canned Vegetables.

Maude Kelly,
The Value of Domestic Science to the Laboring Class.

Almira Elnora Kerr,
The Dietetic Treatment of a Diabetic Patient for One Month.

Venus Kimble,
A Study of Character as Exemplified by Two of Our Greatest Presidents.

Arthur W. Kirby,
Calibration of Commercial Wattmeters.

Orville M. Kiser,
Investigation of Some Methods of Determining Soil Moisture.

Elsie Kratzinger,
A Study of the Dietaries of College Girls.

Carl C. Long,
The Operation of a General Electric 3-Phase Alternator as a Synchronous Motor.

William Thomas McCall,
The Design and Patenting of an Improvement in Hay Tools.

Faye Gertrude McConnell,
Fireless Cookery.

Olive R. McKeeman,
Domestic Science in County High Schools.

Ethel Olive McKeen,
The Bath-Room—Its Equipment and Care.

Fred B. McKinnell,
Comparative Tests of Fuels for Internal Combustion Engines.

Harry Charles McLean,
Efficiency and Regulation Tests of General Electric Transformer, Type H, No. 497204.

Henry Alexander McLenon,
Soil Survey in Atchison County.

Vincente G. Manalo,
Efficiency Test of Steam Separators.

Phillip Edward Marshall,
Calibration of Commercial Wattmeters.

Ethel Madge Martin,
The Rise and Progress of Printing.

Jessie Lou Marty,
A Study of the Dietaries of College Girls.

George A. Moffatt,
The Comparison of Bamboo With Other Woods for Structural Purposes.

Harry H. Momyer,
Efficiency of Storage Batteries, Chloride Accumulator Type.

Orr O. Morrison,
Aberdeen Angus.

Charlotte Augusta Morton,
Surface Design and Stencils.

Edna Anna Munger,
Consolidation of Country Schools.

Jacob Michael Murray,
The Therapeutics of Arecoline.

Lucy Needham,
Some Recent German Fairy Stories.

Arthur Alexander Raymond Perrin,
Efficiency and Regulation Tests of G. E. Transformer, Type H, No. 497204.

Marcia Pierce,
Domestic Science Club Demonstrations.

Herman Albert Praeger,
Investigation of Some Methods of Determining Soil Moisture.

James C. Richards,
Tests With Recording Traction Dynamometer to Determine Force Required to Pull Loads on Roads Having Different Grades and Surfaces.

Blanche Robertson,
Physiological Effect of Exercise.

Clara Dorothy Schild,
Modern Methods of Reforming Delinquent Youths.

Jay Warren Simpson,
Efficiency Test of Hydro-Electric Light Plant at Chapman, Kansas.

Hallie M. Smith,
History and Results of Immigration in the United States.

Jay Latimer Smith,
Plan for Forest Planting in Central Kansas.

M. Grace Smith,
A Dietary Study of a Family of Four.

Martin G. Smith,
A Study of the Agglutination Method in the Diagnosis of Glanders.

Arthur R. Snapp,
Harvesting and Marketing Corn.

Herbert D. Strong,
The Tirrell Regulator.

Daniel Charles Sullivan,
The Benefits to be Derived by the Stock Man From the Eradication of Contagious Diseases.

Helen Louise Sweet,
Furnishing and Decoration of the Children's Room.

Edwin Springer Taft,
Choosing a Life Work.

Irene Alma Taylor,
Outline of Domestic Science for High Schools.

Maude E. Teagarden,
The Sanitary Plumbing of a Modern House.

Raymond Charles Thompson,
The Fifty-ninth Congress; its Personnel, its Organization, and its Acts.

Bessie L. Tolin,
Lectures to High School Students in Domestic Science.

Matilda Trunk,
Studies in Modern German Fairy Stories.

Elsie May Tulloss,
A Kitchen and its Furnishings.

Carroll Walker,
Design of a 75-Kilowatt Power Station.

Daniel Walters,
Design for a City Hall.

Charles R. Welsh,
The Interpolar Motor.

Pauline Emilie Wetzig,
Modern Methods of Reforming Delinquent Youths.

Charles J. Willard,
A Forest Planting Plan for the Waste Land of an Upland Kansas Farm.

Clara Willis,
Outline for Domestic Science to be Used in Vacation Schools of New Bedford, Mass.

Bruce S. Wilson,
The Origin and Development of the United States Army.

Ira A. Wilson,
The Tirrell Regulator.

Nelle Wolf,
Furnishing and Decoration of the Dining-Room.

Andrew H. Wright,
Sweet Cream Butter.

Stuart Smith Young,
Tests of Arc Lamps.

GRADUATE.

Edith Anna Goodwin,
Sulphites as Preservatives.

Charles H. Withington,
Some Braconid Parasites of Plant Lice.

TWO MEMBERS OF THE FACULTY HONORED.

When the class was seated President Nichols announced that the Board of Regents had conferred the degree of Doctor of Arts upon Prof. J. D. Walters, of the Department of Architecture and Drawing, and the degree of Doctor of Science upon Prof. Julius T. Willard, of the Department of Chemistry. Both of these professors, he said, had worked on the upbuilding of the institution for nearly a lifetime, the former having been a member of the Faculty of the College for thirty-two years and the latter for over twenty years. Both had published numerous books on their respective branches of instruction, and both had by their energetic work richly earned the academic title bestowed upon them. The new doctors rose and bowed as their names were read and the audience responded with hand clapping and a tremendous College yell.

THE AFTERNOON.

The program for the afternoon consisted in a band concert in the Auditorium, given by the Cadet Band, a military drill with sham battle on the campus by the College battalion, and a baseball game in Athletic Park, at 4:15 P. M., between the College team and a picked team from the alumni. The campus, with its shady walks and picturesque groups of pines and bushes, was thronged with visitors who had braved the swoolen streams and the sultry June wind in order to see the closing exercises of the great technical school of Kansas. Many, too, visited the departments that had put up exhibits of class work, notably the Department of Architecture and Drawing, which showed several hundred handsome blue-prints on the walls of its drafting-rooms.

WHAT THE GRADUATES WILL DO.

The graduates from the K. S. A. C. this year number 113—55 young women and 58 young men—from the following courses: Domestic science, 46; electrical engineering, 22; agricultural, 17; general science, 15 (six boys and nine girls); mechanical engineering, 6; veterinary, 4; architecture, 4. It will be seen that of the young men 32, *i. e.*, 55 per cent, have selected engineering branches for their life work, the remainder, *i. e.*, 45 per cent, will follow farming, veterinary medicine, or kindred work.

These bright boys and girls, as soon as they have finished their work and have taken a few days rest, will enter at once upon their chosen calling. Here is what some of the members of the graduating class expect to do:

Edna Biddison expects to teach.

Horace Bixby will spend a part of the summer visiting friends

and relatives, after which he intends to go to Pittsburg, Pa., to work for the Pennsylvania Railroad. Carl Long will accompany him.

Bea Cave will spend the summer in Arkansas, and expects to enter Cornell in the fall.

Sol. Cunningham goes to Omaha, Neb., to engage in Y. M. C. A. work with Dexter Holloway.

Charles Doryland will be employed by the Soil Bacteriology Department for the summer.

The General Electric Company, of Schenectady, N. Y., has given Carl Forsberg a job.

Frank Harris will continue as city surveyor of Manhattan.

Helen Huse will take postgraduate work in domestic science here next fall.

Estelle Ise and Ethel McKeen intend to teach.

Charles Jacobus goes to the Westinghouse Company, of Pittsburg, Pa.

Professor Seneca Jones will be called out in the Norton County High School next fall, where he will teach agriculture and the sciences.

Arthur Kirby will work for the Kansas Natural Gas Company, of Independence, Kan.

Elsie Kratzinger will teach domestic science in the Carbondale (Ill.) High School.

W. T. McCall will become one of the scientific stockmen of Smith county.

Jay Simpson will sail for the Philippines June 23, where he will instruct in manual training.

Arthur Snapp will return to the farm.

Herb. Strong will draw pay from the General Electric Company, at Schenectady, N. Y.

Jack Taft becomes Y. M. C. A. secretary of South Dakota University and Agricultural College.

Ray Thompson will be employed in the Chemistry Department of the Experiment Station.

Elsie Tulloss has a position as domestic science instructor in the Ottawa (Kan.) High School.

Florence Dresser, Hulda Bennett, Edna Munger, Cecil Graham and Helen Sweet are to become school-teachers.

Charles Willard goes to Illinois University in the fall to study agriculture.

A. H. Wright is to become a teacher of agriculture and the sciences in Lyons (Kan.) High School.

Maude Teagarden will travel for the Union Publishing Company, of Chicago.

Amy Elder, Clara Schild, Bernice Deaver and Ruby Buckman will teach in high schools in various towns.

Almira Kerr is to go to far-off South Carolina to teach domestic science and art in a colored industrial school.

Orr O. Morrison has received an appointment to a position with the Bureau of Animal Industry, with headquarters at Albuquerque. He will take up his work July 1.

Dora Harlan will teach school in Kansas City.

Herman Praeger will return to his ranch in Barton county, there to apply his knowledge of scientific agriculture.

G. B. Berger will have the position of wire chief with the Independent Telephone Company, of Abilene, Kan.

THE ALUMNI BANQUET.

The festivities of Commencement closed with the triennial alumni banquet, held Thursday night in the gymnasium of the new Y. M. C. A. building. About two hundred alumni were present, and the feast, enlivened by hand shaking, College songs, toasts and addresses, lasted till nearly two o'clock Friday morning. Toasts were given by Ed. H. Webster, '96, Hortensia Harman Patten, '95, and Dr. A. T. Kinsley, '99. The principal address was made by Clarence E. Freeman, '89, of Chicago, who spoke on "Practical Education at Agricultural and Mechanical Colleges." Following is a synopsis of his address:

The discussion of technical education in connection with colleges of agriculture and the mechanic arts at first thought appears to be about as useful and necessary as the process of carrying coals to Newcastle. However, the scope and relative importance of the several arts has been and still is a topic for discussion—at times quite lively. Furthermore, the rapidly changing economic conditions of our country necessitates corresponding changes in the educational preparation of the young men and women who are to deal with these modified circumstances.

From the view point of adjustment to meet new demands the topic of technical education promises to be a live one for sometime to come.

To-day the necessity, to say nothing of the advisability, of a technical education for those who are to be a part of or directly associated with the industrial work of the world is universally conceded. This was not true when I graduated from College nineteen years ago; it was not true twelve years ago. I have very distinct recollections of mates of mine who were quite careful about mentioning their technical training when applying for a position, owing to actual antagonism in many quarters to the technical graduate.

To-day all that has changed. As an illustration, many engineering firms will not consider applicants for positions in their drafting-rooms and in the field unless they have completed a good engineering course. Em-

ployees of large manufacturing establishments and operating concerns are strongly urged by the management to avail themselves of the opportunities of the night schools in the cities or, lacking these, get what they can out of correspondence courses.

You have but to acquaint yourselves with the industrial progress of the various nations of the world to be convinced that this progress is intimately associated with the opportunities for technical training in those nations. To get a perspective of the future it might be well to review the industrial development of this country with particular reference to agriculture and the mechanic arts.

Until thirty years ago agriculture constituted the principal source of wealth of this nation. To-day the net value of the products of the farm total about five billion dollars; that of pure manufacturing about ten billion. Thirty years ago the agricultural population was about forty-five per cent of that enjoyed in productive occupations; to-day it is about thirty per cent. However, during this period the farm area increased more than fifty per cent, while at the same time the average farm decreased in size and increased in value.

Comparing the growth of agriculture with the mechanic arts during the last sixty years we find that while the population of the country has more than trebled, agricultural products have just about trebled, while manufactured products have increased nearly nineteen times. Mechanic arts have been moving six times faster in the aggregate than agriculture! Our country is preëminently a manufacturing country, producing to-day more than half that of all Europe combined.

But the farmer has not been sitting on the fence and admiring the other fellows passing by. He has been *in* the procession, even if he did gravitate toward the rear. During the last ten years he has added on an average four billions of dollars each and every day to the total valuation of the farms of this country. (There are about six million farms, at an average value of $4000 per farm, average size 140 acres.)

In the last twenty years, by the aid of machinery and the substitution of horse-power for hand labor, the effectiveness of human labor on farms has been increased to the extent of about thirty-three per cent. Without doubt the nation owes its agriculture supremacy to the intelligent employment of machinery and domestic animals. Incidentally, the number of horses and mules on the farms in the United States is more than double that of all such animals in England, France and Germany combined.

To what do these comparisons point? Where does our path of progress lead? With what will the intellect and the energy of the nation deal in the years to come? What should be the preparation of the present in order that there may be hardy harvesters in the fields of the future?

The answers are plainly pointed out, and he who runs may read. The mechanic arts in this nation will be supreme and will lead the world. They will invade those sections heretofore considered purely agricultural. Already the South, the Sunny South, which according to the conception of the average northerner is the land of the magnolia, the mocking bird and malaria, the land of cotton, the creole and the crocodile—this land of peaceful field and quiet hamlet is soon to be a seething center of manufacturing industry such as will cause New England to take second place. Its prodigious water powers and immense deposits of coal and iron

constitute the bone and sinew of industrialism, the achievements of which in the near future will make present accomplishments seem puny in comparison.

Following manufacturing and transportation will come agriculture, classified according to dollars and cents, though its products are of primary importance—basal, fundamental. Its relative rate of progress is a matter of conjecture. It will depend in great measure upon the character of the work of the colleges of agriculture and mechanic arts throughout the country, for these activities must be associated if the greatest good is to come to agriculture. The farmer of the future will depend more and more upon machinery and mechanical power. Of the tillable area of the United States the major portion by far has already been taken up. Agricultural increase must come through intensification instead of expansion. Brain rather than brawn must characterize its progress.

What burden does the task and the pace outlined place upon those who are to-day in position to influence or direct the preparation of those who will grapple with the problems of to-morrow? for I assume that an opportunity represents a duty in such matters. Clearly it is to provide trained minds of the highest degree to guide and direct the activities of the future.

With a given amount of resources, necessarily limited, for training purposes a fundamental consideration immediately presents itself. Shall these resources be expended in giving to great numbers a mediocre training, or shall it be elevated to as many as may be found consistent with the highest standard of collegiate training? Which shall be the controling factor—quantity or quality? Which will return the most to the community contributing to its support an educational institution that merely develops an ability on the part of a considerable number to do their own work better, or an institution that raises a less number to that degree where they become, in their respective neighborhoods, veritable centers from which radiate ambition and inspiration in addition to their natural positions as leaders and as guides? As a matter of absolute necessity, every industrial community hopeful of progress must have among its members such men and women. As a matter of efficiency there is no doubt in my mind but that the latter will return the greatest good to the greater number. In other words, somewhere in our scheme of education provision should be made in every state for furnishing that state with as many men and women as highly trained in agriculture and the mechanic arts as are the men and women coming from the professional courses of our best colleges.

As a matter of general efficiency a state university, with its several colleges, would best cover this requirement. However, in some of the states a division of forces has been made, the college of agriculture and mechanic arts being provided with a separate and distinct governing body and operating to all intents and purposes as an institution wholly apart from the university. The result has been that both are bidding for popularity in order to obtain legislative appropriations. We certainly need our doctors of medicine to patch and poultice our physical woes, our doctors of law to heal our social breaks, our doctors of theology to cure our moral ills. Where the two are separate, let the state university look after the alleviation of human misery, while the state colleges of agriculture and the mechanic arts look after increased production and scientific progress.

Local Notes.

The enrolment of the Manhattan institute has now reached one hundred and one.

The water tower is receiving a coat of paint. The work is being done by W. Ross, a student.

The Board of Regents will meet in regular session at the Hays Branch Experiment Station in July.

The College *Agricultural Review* has been consolidated with the *Farmers' Advocate*, published at Topeka.

The contract for furnishing the needed cadet uniforms for next year has been awarded to John Coons, of Manhattan.

A delegation of thirteen students, under the chaperonage of Secretary Davis, left Friday for Cascade, Colo., to attend the Y. M. C. A. conference, which convenes at that place for ten days.

Professor and Mrs. Valley and son Norman have left this week for Chicago, and from there they will go to their summer home in Wisconsin. The professor has a very fine country place on the shore of Millionaire lake.

A number of students have been appointed by the government to go to Albuquerque, N. M., the first of July as sheep inspectors. Among the party are: O. O. Morrison, Jay Smith, A. R. Snapp, R. W. Hull, Rex Tinkham, Bayles, Kiser, A. H. Wright.

Prof. W. M. Sawdon, a former assistant in the Department of Mechanical Engineering, has just received his Master's degree from Cornell University and accepted a position there as assistant professor in the department of mechanical engineering.

The annual competitive drill of the College battalion on Monday afternoon resulted in Co. A, Captain Bull, receiving first place by a score of 204 on a scale of 300 points. Companies B and D followed in order. The judge was Lieutenant Castell, of Ft. Riley. Capt. Elmer Bull received as a prize a gold-headed cane.

One of the exercises of Commencement day was the presentation of a stone and bronze monumental fountain by the senior class to the College. C. T. Gibbon, for the seniors, made the presentation speech and President Nichols, on behalf of the College, accepted the memorial. The fountain stands south of Library Hall, in the space between the new Domestic Science and Art Hall and the Auditorium, and on the prospective walk connecting these buildings.

Nearly two-thirds of the teachers' institutes of Kansas will teach agriculture this year, and many of them are using the pamphlets issued by the Extension Department last year on "Soil," "How Plants Feed and Grow," "Tree Culture," etc. These pamphlets were in the hands of the teachers during the past year, and now at the institute a good opportunity will be offered for a more thorough understanding of these elementary principles of agriculture.

Harry C. Rushmore, '79, a traveling salesman and always a staunch friend of the College, has placed a research scholarship at the disposal of the Department of Philosophy. The arrangement is substantially as follows: Mr. Rushmore has agreed to give $100 to a student who will work out most successfully a certain specified problem in social psychology. The time allotted to the problem will be not less than a year, and the sum stipulated will not be paid until the results of the research are prepared in form of a thesis suitable for publication and distribution. Quite a number will compete for the prize.

Mr. Emil C. Pfuetze, an enthusiastic supporter of College athletics, recently offered a handsome silver trophy for the track athlete who made the greatest number of points in an individual meet, each entry being allowed to compete in the eight events specified, the participants being awarded points on a scale varying with the records made. In the meet held Saturday, Christian, the short distance sprinter, won the trophy by a margin of 41 points, incidentally also breaking the College and State record on the 100-yard dash and the College record in the 440 yard. His time on the 100-yard sprint was $9\frac{4}{5}$ seconds. Bentley received second place and Cave third.—*Nationalist.*

When Capt. Pearl Shaffer, our former professor of military science, left for the Philippines last November he said that he was glad to go where there would be a little excitement. It is possible that he is having some by this time. The following is clipped from the *U. S. Army and Navy Journal*, dated April 1: "Two companies of the 25th, under command of Captain Shaffer, left on the Sabah to-day for the island of Basilan. Since the murder of Case and Verment, the Basilan lumberman, by Moros, the entire country around has been in a state of excitement, and the troops are in search of this band of murderers, who are yet in hiding in the hills. The troops carried thirty days' rations."

The May number of the *Experiment Station Record* contains an editorial concerning the necessity for greater attention to editing experiment station bulletins properly. Reluctance to write and danger of doing it poorly are recognized as very likely to characterize station workers. The editorial continues: "Doubtless a portion of this training may be acquired, at least in a superficial way, as occasion requires, but for proficiency, careful preparation and long practice are essential. An indication of the realization of this fact may be noted in the recent establishment at the Kansas State Agricultural College of a four-year course in printing leading to the degree of bachelor of science. In addition to the practical work in printing, proof-reading, and editing, this course provides for instruction along scientific and cultural lines. Yet, according to an announcement sent out regarding the course, 'It is not expected that at graduation a student will be an expert in any line,' and a graduate course leading to a special degree is also provided for additional study."

Alumni and Former Students.

Pauline Wetzig, '08, was married Commencement morning to J. F. Terrass, a druggist of Dwight, Kan. They will be at home after July 12.

R. A. Seaton, '04, assistant in mechanical engineering, and W. C. Lane, '05, assistant in physics, will spend their vacations studying in the University of Wisconsin.

Edith A. Goodwin, '03, and C. H. Withington, '06, received the Master's degree from this College at Commencement and are studying at the University of Kansas this summer.

In an interesting letter Julia R. Pearce, '90, assistant in the physical laboratory of the Bureau of Plant Industry, Washington, D. C., states that she now owns a cottage in the suburbs and hence finds something to do every waking minute.

F. W. Grabendike, '07, and Miss Nell Christopher, sophomore in 1906, were married at the home of the latter in Wichita, Wednesday, June 17. They will live in Chicago, where Mr. Grabendike is an electrician with the Santa Fé railroad.

Changes of address: Olive B. Dunlap, '05, 600 Vattier street, Manhattan, Kan.; Grant Arnold, '88, 4313 4th Avenue, Seattle, Wash.; Mabelle Sperry, '06, Neodesha, Kan.; Howard M. Chandler, '03, 627 State street, Kansas City, Kan.; Jennie Ridenour, '04, 208½ Chestnut street, Altoona, Pa.

John W. Calvin, '06, has been appointed to an excellent position in the institute of animal nutrition under Prof. H. P. Armsby in the Pennsylvania State College. Mr. Calvin has done good work in the Chemical Department for several years past, and will doubtless acquit himself creditably in his new position.

A. N. H. Beeman, '05, and Miss Maude A. Bedwell, of Leavenworth, were married Tuesday evening, June 16. Mr. and Mrs. Beeman will be at home after July 1 at 2456 Monroe Avenue, Kansas City, Mo. Mr. Beeman fills an important position as proof-reader with the Burd-Fletcher Printing Company.

Mr. Harvey Hubbard, of Childress, Tex., and Miss Nellie Baird, of Marquette, Kan., were married at the home of the bride Sunday afternoon, June 21, at 4 o'clock. Both are well known here, Mr. Hubbard graduating at the College in '07 and Miss Baird in '05. They will be at home at Childress, Tex. Mr. Hubbard is chief electrician of the Denver & Ft. Worth railroad.—*Nationalist.*

One of the most interesting weddings of the month was that of William Anderson and Hope Brady, both of the class of '98. This took place Wednesday, June 10. On Friday they left for a visit with relatives in the northern part of the county, and were prevented by the flood from attending Commencement exercises. The many friends of these young people anticipate a prosperous and happy future for them. Their home will be in Houghton, Mich., where Mr. Anderson is instructor in physics and mathematics in the Michigan College of Mines.

Mr. W. O. Lunt, an owner of land near Sedan, Kan., visited the College this week to consult some of the Experiment Station men in reference to the adaptability of his land for alfalfa. Mr. Lunt was a student at this institution in 1867, but could find only small traces of it as it was then. The names familiar to him are not much but traditions to the present generation.

Earl J. Evans, '07, and B. Florence Sweet, '07, were married Saturday evening, June 20, at the home of the bride's parents in Manhattan. The ceremony took place amid beautiful and appropriate decorations and in the presence of relatives and a limited number of other guests. Mr. and Mrs. Evans left that evening for El Paso, Texas, where Mr. Evans is in business.

Dalinda (Mason) Cotey, '81, has been elected professor of domestic science in this College. Mrs. Cotey has had many years experience in the South Dakota Agricultural College and the Utah Agricultural College. In the latter institution she built up a large department, which she administered with marked success. Her past record gives ample reason to expect success in the larger work of this institution.

The class of '98 made special efforts this Commencement to meet in celebration of the decennial of their graduation. The reunion took the form of a picnic dinner on the campus Commencement day, and in spite of the floods seventeen persons, consisting of '98ers, associate members and former members of the class, enjoyed the dinner hour. Letters from some of the absent members were read, and the important and interesting items concerning all were noted.

Fred Marlatt ['87] left Tuesday, June 16, for Washington, D. C., for a visit with his brother, Prof. C. L. Marlatt ['84]. From there he will go to Providence, R. I., where he will be joined by his sister, Miss Abbie Marlatt ['88], and together they will take a trip to Europe. They will be joined in Ireland sometime during the summer by Prof. and Mrs. C. L. Marlatt, and will remain there until September 3, when the entire party will return to the United States. George Fay will have charge of the Blue Valley foundry during the absence of Mr. Marlatt.—*Nationalist.*

The third session of the Graduate School of Agriculture under the auspices of the American Association of Agricultural Colleges and Experiment Stations will be conducted at Cornell University July 6 to 31. In looking over the schedule we see that graduates of this College participate in giving lectures as follows: M. A. Carleton, '87, gives two lectures on "Rate of Seeding" and "Mixed Crops;" J. B. Norton, '97, "Color Inheritance;" W. T. Swingle, '90, "Scope and methods of plant life history investigations illustrated by recent work on the date palm and alfalfa," and "The law of the limiting factor in relation to variety testing and plant breeding;" F. A. Waugh, '91, five lectures on "Landscape Gardening;" and Ed. H. Webster, '96, "Development in the courses of instruction given for butter-makers" and "Creamery Records and Accounting."

Hortense (Houston) Martin, '83, regretted her inability to be present at the celebration of the twenty-fifth anniversary of her graduation. Her friends will be interested in learning that her son Clarence is on the United States ship "Vermont," one of the fleet making the world tour. Her husband, Mr. A. G. Martin, is a member of the first state legislature of Oklahoma.

The triennial reunion, when we consider the effect of the flood on transportation, must be looked upon as entirely successful. E. F. Nichols, '88, arrived with some difficulty and delivered a very thoughtful address on some of the concepts of modern physicists. This was well received by the audience, and many desire to see it in print. The reunion in the new Y. M. C. A. building was attended by about 215 and seemed to be thoroughly enjoyed by all. The festivities continued until after one o'clock. The alumni manifested intense interest in the future of the College. Space does not permit naming all of the out-of-town visitors, but among those whose presence was the most notable were the following: G. H. Failyer, '77, Bureau of Soils, Washington, D. C.; M. F. Leasure, '77, LaCygne, Kan.; H. C. Rushmore, '79, and Mrs. Rushmore, Kansas City, Kan ; Dr. M. T. Ward, '83, Toulon, Ill., who has attended Commencement exercises but once since he graduated, and has not been on the grounds for twenty-four years; Lora (Waters) Beeler, '88, and Mr. Beeler, Glen Ellyn, Ill.; C. E. Freeman, '89, Hydroelectric Engineer for the Arnold Company, Chicago; J. H. Criswell, '89, Iowa Experiment Station, Ames, Ia.; S. C. Harner, '90, Keats, Kan.; C. H. Thompson, '93, Missouri Botanical Garden, St. Louis, Mo.; Laura G. Day, '93, Stout Training School, Menomonie, Wis.; Ivy F. Harner, '93, Purdue University, Lafayette, Ind.; Dr. J. D. Riddell, '93, Enterprise, Kan.; Winnie (Romick) Chandler, '94, Swope Park, Kansas City, Mo.; Phoebe (Turner) Clothier. '94, St. Marys, Kan.; R. W. Rader, '95, Fayetteville, Ark.; Elsie (Crump) Ames, '95, Boise City, Ida.; Hortensia (Harman) Patten, '95, Oak Park, Ill.; Ora G. Yenawine, Kansas City High School, Kansas City, Kan.; Miriam (Swingle) Joss, '96, Portland, Ore.; Ed. H. Webster, '96, Chief of Dairy Division, Department of Agriculture, Washington, D. C.; Mabel (Crump) McCauley, '97, and Mr. McCauley, Chicago, Ill.; F. V. Dial, '97, Irving, Kan.; Minnie L. Copeland, '98, Herington, Kan.; Dr. Schuyler Nichols, '98, Herington, Kan.; F. J. Rumold, '98, Hope, Kan.; Dr. W. A. McCullough, '98, and Josephine (Wilder) McCullough, '98, Delavan, Kan.; A. D. Whipple, '98, Chicago, Ill.; E. L. Cottrell, '99, Wabaunsee. Kan.; Dr. A. T. Kinsley, '99, Kansas City Veterinary College, Kansas City, Mo.; Regent J. O. Tulloss, '99, Sedan, Kan.; C. A. Chandler, '00, Swope Park, Kansas City, Mo.; F. B. Morlan, '00, Courtland, Kan. Those graduating within this century were too numerous to mention here. It may interest the alumni to know that the association will have a few dollars in the treasury after the bills are all paid. The officers elected at the business meeting were: President, Jacob Lund, '83; vice-president, Emma (Haines) Bowen, '67; secretary, Marcia Turner, '06; treasurer, W. C. Lane, '05.

Board of Instruction (concluded).

JACOB LUND, M. S. (K. S. A. C.) ..... Superintendent Heat and Power Department
JOHN H. MILLER, A. M. ..... Superintendent Farmers' Institutes
MISS LORENA E. CLEMONS, B. S. (K. S. A. C.) ..... Secretary
CLARENCE L. BARNES, D. V. M. (Cornell) ..... Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B. S. (Chicago) ..... Assistant Professor of Physics
ANDREY A. POTTER, S. B. (Mass. Inst. Tech.) ..... Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B. M. (Kan. Con. of Music), B. S. (K. S. A. C.) ..... Asst. Professor of Music
BENJ. R. WARD, A. M. (Harvard) ..... Assistant Professor of English
GEO. A. DEAN, M. S. (K. S. A. C.) ..... Assistant Professor of Entomology
GEORGE F. FREEMAN, B. S. (Ala. Polytech. Inst.) ..... Assistant Professor of Botany
GEO. C. WHEELER, B. S. (K. S. A. C.) ..... Assistant Professor of Animal Husbandry
WILLIAM H. ANDREWS, A. B. (Univ. of Chicago) ..... Assistant Professor of Mathematics

---

Miss Ada Rice, B. S. (K. S. A. C.) ..... Instructor in English
Miss Ella Weeks, A. B. (U. of K.) ..... Instructor in Drawing
Miss Daisy Zeininger, B. A. (Fairmount) ..... Instructor in Mathematics
Leonard W. Goss, D. V. M. (Ohio State University) ..... Instructor in Veterinary Science
Robert E. Eastman, M. S. (Cornell University) ..... Instructor in Horticulture
Miss Ula M. Dow, B. S. (K. S. A. C.) ..... Instructor in Domestic Science
Theo. H. Scheffer, A. M. (Cornell University) ..... Instructor in Zoölogy
Herbert H. King, M. A. (Ewing College) ..... Instructor in Chemistry
John B. Whelan, B. S. (Nebraska) ..... Instructor in Chemistry
William L. House ..... Foreman of Carpenter Shop
Miss Gertrude Barnes ..... Assistant Librarian
Louis Wabnitz ..... Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.) ..... Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.) ..... Foreman of Foundry
Miss Emma J. Short ..... Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
Miss Kate Tinkey ..... Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C) ..... Assistant in Printing
Roy A. Seaton, B. S. (K. S. A. C.) ..... Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College) ..... Assistant in Horticulture
Miss Gertrude Stump, B. S. (K. S. A. C.) ..... Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale) ..... Assistant in Architecture and Drawing
Chas. Yost ..... Assistant in Heat and Power Department
Earle B. Milliard ..... Foreman of Blacksmithing
J. T. Parker, ... Assistant in Woodwork
J. D. Magee, A. M. (Chicago) ..... Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit) ..... Assistant in German
Miss Florence S. Latimer, B M. (Ferry Hall Seminary) ..... Assistant in Music
Miss Marjorie Russell (Mechanics' Institute) ..... Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.) ..... Assistant in Botany
Burton Rogers. D. V. M. (Iowa State College) ..... Assistant in Veterinary Science
Miss Clara Willis (Framingham Normal) ..... Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.) ..... Assistant Chemist, Experiment Station
Edw. C. Crowley, Ph. B. (Yale) ..... Assistant in Chemistry
Hugh Oliver ..... Assistant in Heat and Power Department
Miss Charlaine Furley, B. A. (Fairmount) ..... Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (U. of K.) ..... Assistant in Preparatory Department
Leland E. Call, B. S. (Ohio State University) ..... Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University) ..... Assistant in Mathematics
Miss Annette Leonard, A. B. (U. of K.) ..... Assistant in English
William C. Lane, B. S. (K S. A. C.) ..... Assistant in Physics
Louis H. Beall, A. B. (Denison) ..... Assistant in English
Miss Flora C. Knight, A. B. (Uni. of Wyoming) ..... Assistant in English
Miss Grace H. Woodward (Boston School of D. S.) ..... Assistant in Domestic Science
Miss Nellie Cave, B. M. (Univ. of Nebr.), (Chicago Music Coll.) ..... Assistant in Music
Miss Anna I. McKirahan ..... Assistant in Music
Miss Margaret Mack (K. S. N.) ..... Assistant in Preparatory Department
Edwin G. Schafer, B. S. (K. S. A. C.) ..... Assistant in Agronomy
Orin A. Stevens, B. S. (K. S. A. C.) ..... Assistant in Botany
Charles E. Bassler, D. V. M. (K. S. A. C.) ..... Assistant in Veterinary Science
Miss Mary W. Hancock (Mechanics' Inst.) ..... Assistant in Domestic Art
S. W. McGarrah, A. M. (Grove City College) ..... Assistant in Mathematics
Carl G. Elling, B. S. (K. S. A. C.) ..... Assistant in Animal Husbandry
Arthur L. Peck, B. S. (Mass. Ag. Coll.) ..... Assistant in Horticulture
Kirk H. Logan, B. S. (U. of K.) ..... Assistant in Physics
C. A. Arthur Utt, B. S. (Cornell College) ..... Assistant in Chemistry
Miss Florence Warner, A. B. (Illinois University) ..... Assistant Librarian
Miss Anna Gordon, A. B. (Iowa College) ..... Assistant in Preparatory Department
Loren Clark ..... Assistant in Printing
Miss Bertha M. Johnston (Simmons College) ..... Assistant in Domestic Science
Harrison E. Porter, B. S. (K. S. A. C.) ..... Assistant in Mathematics
E. L. Sieber, A. B. (Indiana University) ..... Assistant in Chemistry
C. S. Knight, B. S. Agr. (U. of Wis.) ..... Assistant in Agronomy
Earle Brintnall, B. S. (Iowa State College) ..... Assistant in Dairy Husbandry
J. B. Parker, M. A. (Ohio State University) ..... Assistant in Entomology
William Neill ..... Dairy Herdsman
G. A. Porteous ..... Herdsman
Wm. A. Lamb ..... Poultryman
Floyd Howard ..... Farm Foreman
William R. Lewis ..... Custodian